THE BUILDER

INCORPORATING

"ARCHITECTURE" and "THE BRITISH ARCHITECT"

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THE PROBLEMS OF THE COTTAGE

ALTHOUGH the building of urban and rural cottages is at present mainly in the hands of the local authorities, whose undertakings reach a fair average standard, we still see a proportion of those erected by private enterprise which fall short of this, owing to faulty design or through aiming at unsuitable ideals. In the first case the result is due to the false economy of working without competent technical advice; in the second to the desire to introduce features often inappropriate or over-fanciful with a view to distinguish the owner's home from those bearing the marks of the more sedate official manner.

It may be not unreasonable to ask for some touches of individuality, but to meet such a demand in a rational and judicious manner demands a high grade of architectural ability, not often available in such circumstances, and thus the result is more often the inclusion of illogical and absurd embellishments which are an irritation to those whose taste is reasonably well cultivated.

The problems involved in fitting small and convenient cottages, either single, semi-detached or in groups, to varying sites and aspects are not so simple as many people imagine and the possible varieties of structural treatment, together with economic demands, present a series of factors which too often fail to be adequately solved. Thus there may be seen in almost every district cottages of recent date that fall short of what they might have been both practically and æsthetically.

These shortcomings have been recognised by some of the controlling authorities, but it has been found difficult to devise adequate control under the normal modes of procedure. For this reason, therefore, the Kent County Council has issued a brief document entitled "Notes for the Guidance of Developers" pointing out the numerous ways in which features militating against good design may be modified or avoided. This publication has been prepared by Mr. James W. R. Adams, P-P.T.P.I., the County Planning Officer, and Mr. E. W. Berridge, M.A., A.R.I.B.A., Divisional Planning Officer. It has a liberal provision of illustrations explanatory of the various points dealt with and by this means it would be of definite assistance to the less knowledgeable builders and others in keeping clear of the worst snags.

In issuing this document the County Planning Committee recognised that the hints it gives, though of definite value, could not be regarded as equivalent in result to the employment in all cases of a qualified architect. This view was made the subject of the following paragraph: "While the question of whether an architect should be retained is admittedly within the discretion of the developer, and while these notes have been prepared with a view to assisting developers who for some reason have decided not to retain an architect, it should be made clear that the advice given in this booklet will not obviate or reduce the work involved in the designing of a building and the preparation of plans to any extent whatever. The notes are not exhaustive nor should they be regarded as constituting inflexible rules which must be observed in all circumstances."

While this gives a broad hint as to the desirability of all buildings being designed by qualified architects it still falls short of a stipulation to that effect. In our opinion such a rule has been long overdue, and that it is not yet in force is due to the lack of recognition of the value of the architect's services, in both the realms of economy and æsthetics, among the less instructed sections of the community. We may admit the difficulty of finding a well qualified professional man to deal with small buildings in remote areas, but feel that it might be practicable for the authorities to help developers by some arrangement such as the panels that have been in operation hitherto, or by offering some other special facilities to those who desire to build.

In any case, it is important that future buildings, even of the smaller types, should be the best in all respects that it is possible to provide.

THIS WEEK'S NEWS

PAGE

THE COUNCIL of the Royal College of Art has appointed Mr. Rodney Thomas, A.R.I.B.A., to prepare a report and a schedule of requirements to guide the architect officially chosen to erect a new building for the Royal College. 766

THE JURY formed to select the best building erected in Scotland during the period 1936 to 1949 has announced its award in favour of Messrs. T. Harold Hughes and Waugh, the architects for the reading room in Glasgow University. 766

THE RESULT of the election for the officers and council of the Architectural Association for the session June 1, 1950, to May 31, 1951, has been announced. 766

THAT THE STATE should undertake a proportion of the cost of repairs or necessary improvements was the only solution to the factor of expense in the preservation of buildings of historic and architectural interest, was a suggestion made by the Earl of Rosse, chairman of the Georgian Group, at the British Architects' Conference which opened at Bristol yesterday. 770

THE REBUILDING of Westminster City Council Chamber, for which Messrs. Collcutt and Hamp were the architects, is illustrated and described. 772

THE FESTIVAL OF BRITAIN AUTHORITIES have announced details of the arrangements for the Festival Pleasure Gardens to be provided in Battersea Park next year. It is expected that the names of the architects appointed to prepare designs for the various features proposed will be made known in about a fortnight. 782

A SURVEY of recent progress made in regard to the radiant heating of large-scale buildings is given in a special article by Leo M. Walter, A.M.I.Mech.E. 784

SOME OF THE EQUIPMENT and items of plant of interest to the building industry now on show at the Mechanical Handling Exhibition at Olympia are reviewed in a special article. 789

NOTES AND NEWS

Royal College of Art

THE need for a new building for the Royal College of Art has been recognised for at least 40 years. The need has become even more pressing following the reorganisation of the College in 1948-49 to enable it to fulfil its obligations to industry to train industrial designers who will be conversant with modern technological processes. A site for the new building has been set aside in a prominent position in Kensington.

Although the new building may not be completed for a number of years owing to the general economic position and the stringencies of the investment programme, the council of the College is making preparations in order that rapid progress may be made as soon as building work becomes possible. These preparations include research into the requirements of the various schools and departments of the College in order to erect a building which will satisfy the needs of students training to become artists and industrial designers, and at the same time will be worthy both of the site and of the College's position as the National College of Art and Design.

For this work the council has appointed Mr. Rodney Thomas, A.R.I.B.A., who will prepare a report and a schedule of requirements to guide the architect officially chosen to erect the new building. The council has also appointed Mr. Basil Ward, F.R.I.B.A., Professor of Architecture at the College, to act in a consultative capacity to assist the principal and the council in their instructions to Mr. Rodney Thomas.

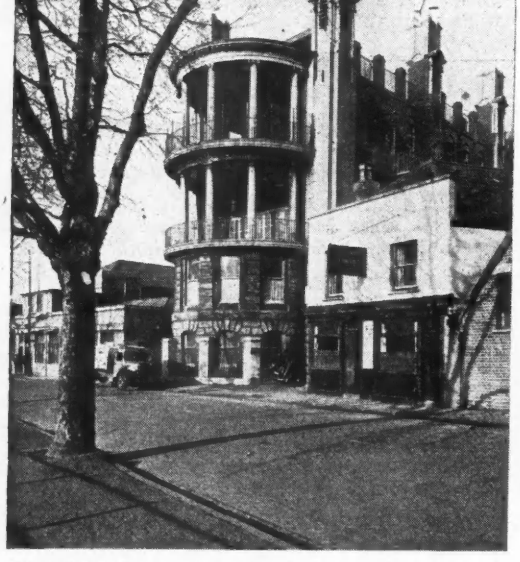
The Carlton Club.

A CORRESPONDENT WRITES:—Interesting plans have been prepared for the addition of rooms for guests at the Carlton Club in St. James's-street. These have been prepared by Messrs. W. H. Watkins, Gray and Partners. FF.R.I.B.A., of 19, Grosvenor-place, S.W.1.

The original Carlton Club still stands, a bombed ruin, in Pall Mall, and belongs to the members of the Club on a Crown lease. It is understood that the cost of rebuilding, even if a licence could be obtained, would be prohibitive under present conditions. Therefore, for the last six or seven years the members have occupied much smaller premises in St. James's-street. They are, in fact, so small that no guests of any kind are allowed inside. In response to a demand for facilities to be given for the reception of guests, the Club's architects have recently submitted detailed plans. Under these the present library on the first floor would be converted into a dining room. The adjoining committee room would be turned into a sitting room, complete with bar. The necessary lavatory accommodation for both sexes would be provided on the same floors, and in the basement. Lifts would connect the dining room with the entrance and with the kitchen. As parts of the building were built over 200 years ago, and as the front, which includes the billiards room, has had to be strengthened following bomb damage, the task of carrying out modernisation plans will present many problems. The plans have not yet been approved by the general body of members of the Club.

Architectural Awards.

THE recommendation of the jury, formed to select the best building erected in Scotland during the period 1936 to 1949, has been approved by the Royal Institute of British Architects, and the Bronze Medal was awarded to Messrs. T. Harold Hughes and Waugh, the architects of the reading room in Glasgow University, at the annual dinner of the Royal Incorporation of Architects in Scotland on June 2. The last medal awarded in Scotland covered the period ended in 1935, the normal period being five years, but owing to the war the next period was from 1936 to 1949. The jury consisted of three members of the R.I.A.S., a representative of the R.I.B.A., and two lay members.



THE GENERAL HOSPITAL, BRISTOL. This hospital, in Cumberland-road, with its sun-catching balconies, is a notable example of Victorian architecture in this west country city. *(See Note.)*

Planning Act Discussion.

AT THE GENERAL MEETING of the R.I.B.A. fixed for Tuesday, June 20, following the announcement of the Council election results, there will be a discussion on the working of the Town and Country Planning Act, 1947. This discussion is to enable architects to give their experience of the working of the Act to date. The Act will be considered under three broad headings and a speaker will be chosen to initiate each section. The President will be in the chair, and Professor W. G. Holford (F) has undertaken to direct the discussion. The three headings are: The development charges; the operation of the Act as it affects the architect; the operation of the Act as it affects the planning authority. The evening has been organised to enable members to take part in the discussion, and as much time as possible will be allowed for this.

A.A. Election.

THE RESULT of the election for the officers and council of the Architectural Association for the session June 1, 1950—May 31, 1951, is as follows: President, S. E. T. Cusdin, O.B.E., A.R.I.B.A., A.A. Dipl.; Vice-Presidents, Anthony M. Chitty, M.A., A.M.T.P.I., F.R.I.B.A., A.A. Dipl. and A. R. F. Anderson, F.R.I.B.A.; Hon. Secretary, the Hon. Godfrey Samuel, M.A., A.M.T.P.I., F.R.I.B.A.; Hon. Treasurer, Bryan Westwood, A.R.I.B.A., A.A. Dipl.; Hon. Editor, Frederick MacManus, F.R.I.B.A.; Hon. Librarian, Peter Shepheard, B.Arch., A.M.T.P.I., A.R.I.B.A.

Members of Council:—G. A. Atkinson, B.Arch. (Hons.), A.R.I.B.A.; W. W. Atkinson, O.B.E., A.R.I.B.A., A.A. Dipl.; J. M. Austin-Smith, M.C., A.R.I.B.A., A.A. Dipl.; Henry Braddock, Dist. T.P., A.R.I.B.A., A.A. Dipl. (Past President); D. Clarke Hall, F.R.I.B.A., A.A. Dipl.; G. I. Goulden, T.D., A.R.I.B.A.; Cyril S. Mardall, A.R.I.B.A.; Anthony Pott, A.R.I.B.A., A.A. Dipl.; Miss Barbara Price, M.A., A.R.I.B.A., A.A. Dipl.; J. M. Richards, A.R.I.B.A., A.A. Dipl.; Hilton Wright, A.R.I.B.A., A.A. Dipl.

100 Years of Architecture.

THE EXHIBITION arranged by the Bristol Society of Architects, "One Hundred Years of Architecture in Bristol," will be on view at the R.I.B.A. from June 16 to 24. The object of the exhibition is to give a picture of the works of architecture which have been built in the Bristol region during the past hundred years, whether designed by relatively unknown local men or by the more celebrated London practitioners. It is devoted primarily to the architecture of the Victorian period.

The exhibition is arranged by styles, opening with the Late Greek revival, which persisted in Bristol until about 1855, and closing with the Neo-Georgian of the period between the wars. The largest single sector is that of the Gothic revival which, though it reached Bristol relatively late, furnished an important complement of private houses, churches, schools and public buildings. Butterfield built his first two churches in Bristol; John Norton was very active there; James Wilson, the architect of Cheltenham College, practised in Bath, and Charles Hansom, the designer of Clifton College, practised in Bristol.

Bristol Byzantine.

THE MOST INTERESTING category is probably the one which has been labelled "Bristol Byzantine." In the sixties and early seventies Bristol experienced her first large-scale industrial development. "Bristol Byzantine" was the local architects' answer to this new need. The inventors of the specifically Byzantine detail were the firm of Foster and Wood, but Edward William Godwin and William Bruce Gingell also contributed and the most celebrated building of all, the granary on the Welsh Back, was the work of Archibald Ponton.

Apart from the fact that Edward William Godwin came from Bristol, Bristol had no part in the movements which were altering architecture in the last quarter of the nineteenth century, and it was not until the decade 1900-1910 that she again had distinguished work to show.

In addition to the 47 sheets of photographs of buildings, four screens are devoted to the Bristol Society of Archi-

tects itself. These contain material drawn from the archives of the Society and of local firms, reproductions of portraits, documents, leaves from minute books, and aim at giving a picture of the vicissitudes of the Society during the hundred years.

Architects' New York Visit.

DR. RONALD BRADBURY, F.R.I.B.A., Liverpool's City Architect and Director of Housing, is now in New York studying American methods of flat-building and house construction with a view to adapting some of their methods to Liverpool. Dr. Bradbury is in company with Ald. A. E. Shennan, F.R.I.B.A., who is leader of the City Council and chairman of the Post-War Redevelopment Committee; the City Engineer, Mr. H. T. Hough; and the City Treasurer, Mr. J. Ainsworth. In addition to housing schemes, they will also study traffic conditions and methods by which congestion may be relieved.

Lighting in Churches.

FINDING the right method of lighting for church buildings constitutes a problem. The tendency of electrical contractors, if unchecked, is to overlight, and by creating a flat, even, distribution of light, to kill the shadows which Gothic mouldings were made to produce. The lighting of renaissance buildings creates another set of problems. The new regulations for the lighting of all Church of England churches, recently issued by the Central Council for the Care of Churches, lay down that an architect should always be employed to supervise all electrical work. The general opinion among the various advisory committees which helped in the compilation of the regulations is that a pendant system of lighting for the majority of churches of traditional design is most suitable.

Architects who are ever likely to be concerned with work of this kind are urged to obtain copies of Part II of the publication for supplying to contractors tendering on their specification. Parts I and II together are priced at 4d. (by post 5d.) and may be obtained from the Church Information Board, Church House, Dean's Yard, Westminster, S.W.1.

The R.I.C.S. President.

MR. HERBERT PRENZEL HOBBS, who was elected President of the Royal Institution of Chartered Surveyors on June 5 last, in succession to Mr. John A. F. Watson, is senior partner of the firm of Messrs. W. T. Gunson and Son, architects, surveyors and valuers, of 10, Marsden-street, Manchester 2, and Martins Bank-chambers, Lancaster. Mr. Hobbs has spent all his professional life in Lancashire and was honorary secretary of the Lancashire and Cheshire junior branch of the Institution from 1929 to 1932, and of the senior branch from 1932 to 1945, being chairman of the branch in 1943. Since 1944 he has been a representative of that branch on the council of the Institution, was elected a vice-president in 1947 and senior vice-president in 1949, and has served on most of the standing committees of the council, having been chairman of the general purposes committee since 1946. He was chairman of the joint conference of the Institution and kindred societies which revised the schedule of professional charges in 1948 and has represented the Institution in many other capacities.

Architect's Estate.

THE late Mr. T. Grazebrook, L.R.I.B.A., of Pedmore, Stourbridge, retired architect, left £27,339.

BATHFORD BRIDGE, SOMERSET, over the Box brook, which flows into the near-by Avon, is shortly to be strengthened against the increase of traffic. It is feared that there may be consequent interference with the tablet (shown above) which records the names of the people who built it, from Justices of the Peace to the surveyors and workmen.

Professional Announcement.

MR. HAROLD ALEXANDER, L.R.I.B.A., informs us that he has changed his address to 174, Sloane-street, Belgravia, S.W.1. Tel.: Sloane 4488. He has also taken into partnership his brother, Mr. MAURICE ALEXANDER, L.R.I.B.A., and in future the title of the firm will be Messrs. Harold Alexander, LL.R.I.B.A.

COMING EVENTS

Friday, June 9.

INSTITUTE OF ECONOMIC ENGINEERING (SOUTH LONDON REGION).—"Shared Management: An Experiment in Industrial Democracy," by Mr. J. J. Gillespie. "Elephant and Castle," S.E.1. 7 p.m.

INSTITUTE OF ECONOMIC ENGINEERING (NORTH-WEST LONDON REGION).—Mr. H. E. Kearsey on "Performance and Cost Control." "George Hotel," Church-lane, Kingsbury, Wembley. 7 p.m.

Monday, June 12.

R.I.B.A. AND L.M.B.A.—A reception to mark the inauguration of the London Regional Council of Builders' Foremen and Clerks of Works. 66, Portland-place, W.1. 6 p.m.

SOCIETY OF WOMEN ARTISTS.—Opening of 89th exhibition of pictures, sculpture and crafts. Royal Institute Galleries, 195, Piccadilly, W.1. 10 a.m.-5 p.m. Continuing until June 29.

Tuesday, June 13.

GUILDFORD BOROUGH COUNCIL.—Opening of exhibition of civic hall designs. Guildford House, High-street, Guildford. 3.30 p.m.

CENTRAL SCHOOL OF ARTS AND CRAFTS.—Exhibition of work and presentation of diplomas by Sir Kenneth Clark, K.C.B. Central School of Arts and Crafts, Southampton-row, W.C.1. 3 p.m.

Wednesday, June 14.

L.M.B.A. (CENTRAL AREA No. 1).—General meeting and an address by Mr. N. S. Farrow, M.B.E., on the U.S.A. productivity tour. Berry and Tom's Restaurant, Kensington High-street, W.8. 1 p.m.

REINFORCED CONCRETE ASSOCIATION.—Annual luncheon. Waldorf Hotel, Aldwych, W.C.2. 1 p.m.

ARCHITECTURAL ASSOCIATION (CAMERA CLUB).—A visit to Harrow factory of Messrs. Kodak, Ltd. A.A., 34, Bedford-square, W.C.1. 2 p.m.

Thursday, June 15.

ROYAL INSTITUTION OF CHARTERED SURVEYORS.—General meeting of quantity surveyors. A discussion on the recently published report of the Building Industry Productivity Team. Institution of Mechanical Engineers, Storey's Gate, S.W.1. 6 p.m.

EAST HAM SCHOOL OF BUILDING.—Speech night and exhibition of work. School of Building, Arragon-road, E.6. 7.15 p.m.

Saturday, June 17.

ARCHITECTURAL ASSOCIATION.—Visit to Festival of Britain site. 10 a.m.

FROM "THE BUILDER" OF 1850

Saturday, June 8, 1850.

SOMEBODY WRONG.—The following are the tenders delivered for building a church in the Victoria-road, Kensington:—

	£	s.	d.
Higgs and Son	5,400	0	0
Todd	4,950	0	0
Bird	4,849	0	0
Locke and Nesham ...	4,530	0	0
Smith and Appleford ...	4,497	0	0
Kelk	4,475	0	0
Rigby	4,450	0	0
Haward and Nixon ...	4,375	0	0
Holland	3,573	0	0
Myers	3,540	0	0

RENOVATION OF THE MANSION HOUSE

BY THE CORPORATION OF LONDON

THE last time a full programme of works of a major character was carried out at the Mansion House was in 1930. This included the construction of extra rooms for staff over a portion of the centre part, the complete remodelling of the kitchens, the provision of new service lifts and service staircase, the construction of the gallery around the Egyptian Hall, the complete redecoration of the premises and renewal of much of the furniture, carpets and other fittings.

Since that time it has been the custom each year, before the commencement of the new Mayoralty, to carry out a certain amount of maintenance work, consisting of the cleaning down of rooms and the redecoration of sections as required. During the war the maintenance of the Mansion House was, of necessity, reduced to bare minimum; while damage was sustained from high explosive bombs which fell in the vicinity, notably on the Bank Tube Station and in Walbrook. At the end of the war, therefore, the Mansion House had received little attention with regard to decorations, and much first-aid repair work to windows, ceilings, partitions, etc., awaited permanent repair.

In addition to being the residence of the Lord Mayor of London, the Mansion House contains a Justice Room, which is in use daily, and is the scene of many receptions and other functions at which important personages from the Empire and foreign countries are entertained. It was, therefore, essential that the Mansion House should be put into a state of proper repair and decoration as soon as possible. Although the building had not sustained any severe structural damage, there was need for an immense amount of repair work, part attributable to war damage and part to deferred maintenance.

The first step was to prepare a complete schedule of every room and of the external elevations and roof, showing the general state of the defects. Many of these could not be seen until first-aid repairs or other covering works had been removed, but it was possible to prepare a general specification for the rehabilitation of the building sufficient for bills of quantities to be produced. These were prepared in great detail room by room, under three headings: (1) War damage repairs; (2) Deferred maintenance repairs; and (3) Redecoration. This method greatly assisted negotiations with the War Damage Commission in agreeing items attributable to war damage and the proportions of decorations relative thereto.

As it was essential to keep the Mansion House in full occupation during the carrying out of the work, bills of quantities were collected into sections or suites of rooms which could be vacated while work was in progress. In due course, tenders were invited for the whole of the work on the understanding that it would be executed in sections, and that the building would be in occupation during the whole of the contract.

The lowest tender, amounting to about £43,000, was carefully considered by the General Purposes Committee and accepted by the Court of Common Council of the Corporation of London. After negotiations with the War Damage Commission it was agreed that out of this figure work to the value of approximately £19,000 was attributable to war damage. The bills of quantities contained numbers of provisional sums to cover work which could not be seen, and as and when it has been possible to ascertain the extent of repairs necessary, these have been agreed with the War Damage Commission from time to time.

The first section of the work — the suite of reception rooms on the first floor —was commenced in August, 1948, and since then it has been possible to proceed from section to section with very little delay, and without stopping the work entirely for any period. This has meant considerable inconvenience to the Lord Mayor and his household. For instance, while the Venetian Parlour (the Lord Mayor's private office) was being repaired and redecorated, the Lord Mayor used the Long Parlour as a temporary office, and during the rehabilitation of the Justice Room, the Court was held in the front part of the Saloon, which is the main reception room on the first floor. The Lord Mayor also had to make temporary arrangements while work was carried out in his private residential rooms.

The part of the Mansion House best known to the general public is the Egyptian Hall, which extends the full width of the south end of the building, and in which all major dinners, luncheons and meetings are held. This hall was badly shaken, and although at first glance it did not appear that major structural damage had been sustained, it was found that many of the large plaster rosettes in the coffered ceiling were fractured, and pieces of some of them had in fact fallen since the war. These rosettes weighed approximately 3½ cwt. each, and it was decided to replace them in precast fibrous plaster, each rosette weighing about ½ cwt.

The stained-glass windows at the east and west end of the Egyptian Hall sustained considerable damage early in the war, but the glazing was subsequently removed and stored in crates in the basement. During the rehabilitation these windows have been pieced together and missing portions replaced, and they are now back in position. The whole of the Egyptian Hall, with the remainder of the building, has been redecorated in tints of cream and beige similar to those of the original decorative scheme.

In 1930 a lighting system was installed in the Egyptian Hall consisting of a series of tungsten lamps (each with its own reflector) along the top of the cornice at the springing of the vaulted ceiling, and of hidden strip-lighting around the panelled

The Egyptian Hall.

Detail of restored coffered ceiling of the Egyptian Hall.

soffit of the gallery. During the present rehabilitation the whole of this lighting has been replaced by fluorescent tubes, which give a soft and pleasant overall light on the floor. Similar lighting has also been installed in the old ball room. The internal work is now practically completed, and there remains only the external painting and washing and repair to stonework to be done. The work has been carried out under the supervision of Mr. George Holliday, F.R.I.C.S., the City Surveyor, his assistants principally in charge being Mr. A. H. Powell, F.R.I.B.A., Mr. V. C. Hunt, A.R.I.B.A., and Mr. H. J. Williams, A.R.I.B.A. The quantity surveyors were Messrs. Cross and Hall. The general contractors were Messrs. Holliday and Greenwood Ltd., and sub-contractors for special items included: electrical installation, Girdlestone and Co., Ltd.; slating, J. T. Ettridge; fibrous plaster, G. Jackson and Sons, Ltd.; stained glass, Wainwright and Waring, Ltd.; paints, Jenson and Nicholson, Ltd.; stonework repairs and washing, Szerelmey, Ltd.; scaffolding, Scaffolding (Gt. Britain) Ltd.; fluorescent lighting troughs, Courtney Pope (Electrical) Ltd.

(Historical Note: The Mansion House was completed in 1753 from the designs of George Dance the Elder, the City Surveyor.)

BRITISH ARCHITECTS' CONFERENCE

The Protection and Preservation of Historic Buildings

THAT the only solution to the factor of expense in the preservation of buildings of historic and architectural interest would appear to be in the State undertaking a proportion of the cost of repairs or necessary improvements, was a view expressed by the EARL OF ROSSE, M.B.E., F.S.A., chairman of the Georgian Group, in a paper read at the British Architects' Conference at Bristol on June 8.

He began by saying that until about a century ago appreciation of the importance of the arts, and of æsthetic values in general, could be considered automatic in any man or woman with any claim to education, but with the industrial revolution came a change of attitude which slowly but surely pervaded almost every section of the population. "Industrial progress," he said, "was and is not only inevitable but highly desirable; it is, however, quite unnecessary that it should always take place at the expense of beauty, whether natural or created by man."

Comparing architecture with the other arts, he said that other works of art cost little, if anything, to maintain, while an old building could involve its owner in enormous expense. A building could not be moved except as a *tour de force*, and the site it occupied, especially in large towns, might often be infinitely more valuable once it was removed. The speaker continued:—

In cities and towns, too, the majority of the better buildings, particularly of the classical period, are in blocks, and the destruction or mutilation of only one house inevitably ruins the appearance of all others in that block and weakens the case for their retention. The present crushing rates of taxation and death duties have increased the danger yet more. No landlord is able to feel any security either for himself or his successors, and even the country houses and estates, which may be claimed to represent one of England's most notable achievements in the field of culture, have become threatened during our lifetime. It can, indeed, be claimed with some justification that the tide has now turned, as is evidenced in certain of the provisions of the recent Town and Country Planning Acts, but in all too many places everything worth saving has already been overwhelmed.

You may reasonably ask why should any old buildings necessarily be preserved? Should not each succeeding generation be capable of improving on the works of its forebears? In certain cases this is no doubt possible, but only if a wide selection of the best buildings of the past exists for them to study; and it would be a bold man who would claim to surpass such great architects of the past as Sir Christopher Wren and Inigo Jones, albeit with some three centuries more experience to draw upon. Apart from so extreme an example, it is difficult to conceive of anything more fitting to the English scene than the golden churches of Northamptonshire or a typical Cotswold village; what living man could improve on them?

The Use of Preserved Buildings.

Let us admit at once that all old buildings cannot be preserved. Very few deserve to be kept as ruins, and for all others a use must be found, which under the changing conditions of the modern world is not always easy. Furthermore, and particularly in the case of those in towns, there exists the problem of fitting them in with the necessities of town planning. Some preservationists are inclined to be frightened of town planning and to imagine that it is necessarily hostile to their aims. It is true that the two must often conflict, but it should be remembered that classical architecture is essentially planned, and that the first great British town planner was Sir Christopher Wren. In his day, as in ours, planning may sometimes entail the disappearance of good buildings of the past, but compromises which leave the most important factors of both points of view intact can usually be reached. It is interesting to note that in Paris, probably the best example of a planned city (in Europe), the classical architects responsible for modernising its layout drew a series of concentric boulevards round the central mediæval area, which they left virtually intact.

The Four Categories.

What could be done in the past can be done now, and for practical purposes old buildings may conveniently be divided into four categories. First, there are those of paramount importance which must at all costs be preserved intact both inside and out and, except in a very few places, even if they conflict with planning considerations. This is a very small class. Second, come those where exteriors only merit complete protection; while in many cases it will be most desirable to include some at least of the interior, it will often have to be admitted that only by a complete remodelling inside can an economic use be found. Third, there are the less important buildings whose retention is generally desirable but which would have to be sacrificed if planning considerations demanded it. Fourth, there is the class whose loss in the normal process of time need cause no regret from any quarter. This is obviously a very broad classification and in particular it should be emphasised that small houses and shops can often deserve keeping every bit as much as larger ones, especially from the point of view of retaining the atmosphere of old-world towns and villages.

It is one thing to postulate that such buildings should be preserved, but it is a necessary corollary, if the plan is to be put into effect, that practical proposals for their use should also be produced. In certain cases those in the first class will have to be turned into museums or institutions instead of being used for the purpose for which they were built. This will exhaust almost all the possibilities in this line, and for this reason it is necessary to agree that, probably in the great majority of cases, all other houses will have to be converted so as to be more suitable to modern conditions. The interiors may have to be completely gutted in order to effect this, but the French have long ago shown us that even such notable façades as that of the Palace of Vendome in Paris need not suffer as a result.

Sometimes the conversion will be into business or professional premises, at others into residential flats, but the general principle will be the same—that of turning two or more buildings that were planned for vertical use when considerations of time and labour were of no importance into one to be used horizontally. Big rooms may also have to be subdivided and new plumbing facilities and other offices inserted. It is useless to pretend that it is an easy job; in some ways it can demand more of an architect than the construction of a new house and the discredit in which the principle is held in some quarters is due to an all too prevalent habit in the past of not employing architects who had made a special study of the problem or, worse still, not employing an architect and relying on some enquirer or builder to provide something which was more a clumsy adaptation than conversion.

Conversion has also sometimes been attacked for being expensive. All building can be, and conditions vary enormously, but in general, new accommodation can usually be provided as cheaply, and often more so, than by the construction of new houses. There is the additional advantage that more valuable agricultural land is not used up and accommodation is provided in convenient areas where full public services exist instead of in remote ones where they do not. In short, by this method fine old buildings are preserved, and at the same time new homes are provided more economically and conveniently than would otherwise be the case.

Ancient and Modern.

The question is often put: can old buildings and modern ones exist side by side to mutual advantage? The difference between the traditional and modern styles is so marked that, in my opinion, the two should be kept apart as much as possible. Where, however, it is not, I submit that it is reasonable to ask that the modern building shall conform generally in elevation and material to the older ones. Design is less important, but it should be obvious that a ferro-concrete erection some six storeys or more high in juxtaposition with a Georgian terrace or the cottages of a stone-built village can only have the effect of making them both look ridiculous, whatever their individual merits apart.

The material is of particular importance in England, since no country of comparable area has more varied scenery, and each district with such distinct character. It is impossible to think of the Cotswolds apart from their superb stone of which almost every building is constructed, nor of East Anglia apart from its magnificent flint churches. Every effort should be made to preserve the craftsmanship in the various areas necessary to continue building in the traditional material. Expense is often an almost insuperable factor, but recent experiments in the use of reconstructed stone appear distinctly encouraging. While the price is immeasurably cheaper the effect is indistinguishable except at very close quarters.

The Problem of Expense.

This factor of expense is generally the most difficult problem to be faced now that the principle of the importance of preservation has received official sanction in the recent Town and Country Planning Acts. Sufficient legal powers now exist effectively to protect from wilful destruction all buildings of value, but initiative on the part of some individual or authority is necessary to exercise the power on each occasion. The fact that the question of cost has not yet been faced up to acts as a horribly powerful deterrent. The position is vitiated still further by the penal rates of taxation which have been enforced in recent years. These have ensured that almost no private individuals have been able to keep their properties in a first-class state of repair and even less to carry out the reinforcements which are often necessary if their condition is not eventually to deteriorate. To quote from the

report of the Bath Conference: "Even before the War the majority of owners only carried out sufficient repairs to make their properties wind and waterproof: architectural features such as cornices, columns, capitals, and architraves to doors and windows were left slowly to disintegrate. A good instance of this is the Circus, where the façades of only three houses have had adequate reparation in the past quarter-century. In one instance 1914 costs of repair are available: the figure was £500. This included proper repair of all the architectural features of the façade, and the covering of the cornices with lead—a most necessary measure if the stone is to be preserved. It is estimated that the cost of similar reparative work at present-day prices would be about £1,750. To-day, the position is even more unsatisfactory. Taxation has increased so greatly as to leave owners with little or no money to spend on 'inessentials'—and while a property in good decorative repair will sell or let for a higher figure than a dilapidated one, the replacement or repair of external architectural features does not materially affect its value. And it is, indeed, scarcely to be expected that owners in present times should put their hands into their pockets to finance unaided the heavy cost of such reparative work."

The principle of State aid in the matter of the cost of repairs or improvements has long ago been accepted in certain continental countries, notably in France, Belgium, Holland and Denmark. While their arrangements differ in detail, the owner is generally assisted by a grant of 50 per cent., and sometimes more, from public funds. The manner in which the money is expended naturally must be approved by the public authority, usually represented by a special Architectural Service. There seemed reason to hope that the team of investigators allotted to the Ministry of Town and Country Planning might eventually grow into some such organisation and their drastic pruning by half by the Chancellor of the Exchequer has been discouraging. On the other hand, the establishment of an Architectural Service after the French model was included in the evidence submitted to the Gowers Committee by the Georgian Group, and its forthcoming Report may have something to say on the matter.

CORRESPONDENCE

[Whilst we are glad to publish letters on professional and other matters of interest to our readers, it must be understood that we do not necessarily endorse the remarks of correspondents, who will oblige us if they will express views as briefly as possible.]

Quantity Surveyors and Commercial Firms

To THE EDITOR OF *The Builder.*

SIR,—With reference to the remarks made by "Chartered Q.S.," of Solihull, in your issue of May 26, I have gathered the impression that he is unaware of the Working Party Report on Building.

If he will peruse paragraphs 30 to 38, and 82 to 88, he will see their recommendations. These recommendations were anticipated by the Institute of Quantity Surveyors and therefore his remarks show a complete ignorance of the trend of present-day affairs.

Also, I can see quite clearly that he does not understand the difference between a builder and a quantity surveyor. If he understood the difference between these two he would realise that the syllabus for the Institute of Quantity Surveyors is in no way comparable with that of the Institute of Builders.

Further, in passing, I would like to add that the Institute of Quantity Surveyors holds both an Intermediate and Final Examination, thus having more subjects than for the single examination which obtains a diploma from the Institute of Builders.

In no circumstances can I see the relevance of accountancy to these matters.

The whole question of quantity surveying which is involved by the Working Party Report is whether the builder should be entitled to employ a fully qualified quantity surveyor to meet the nominated quantity surveyor.

Whether the Royal Institution of Chartered Surveyors will heed the recommendations of the Working Party Report is beyond the scope of this correspondence, but they cannot lightly pass it over.

The present position is that quantity surveyors employed by commercial firms are unable to take any examinations for *quantity* surveying. I think that one can say, in all fairness, that the diplomas of the Institute of Builders are for builders, not quantity surveyors. Surely, in summing up, the Institute of Builders caters largely for the master builder who must have knowledge of all aspects of his business, whereas the quantity surveyor is concerned purely with quantity surveying.

W. J. MASTERMAN,
Hon. Gen. Secretary,
Institute of Quantity Surveyors.
98, Gloucester-place, W.1.

To THE EDITOR OF *The Builder.*

SIR,—In the letter written by "Chartered Q.S.," in your issue of May 26, it is inferred that because the Institute of Quantity Surveyors permits its members to be employed in commercial as well as approved professional offices, it will occupy an analogous position with a certain institute in the world of accountancy.

The Royal Institute of British Architects and the Institution of Civil Engineers also allow their members to be employed in either capacity. What position in the future would "C.Q.S." forecast for these two bodies? Further, is "C.Q.S." suggesting that the R.I.B.A. and the I.C.E. are inferior to the R.I.C.S. because they sanction this manner of employment? Also, is he right in suggesting that the R.I.C.S. would be departing from professional standards if they decided to change their policy?

It is unfortunate that "C.Q.S." does not understand the difference between a builder's surveyor and a quantity surveyor, or he would not have fallen into the trap of believing them to be the same thing. Moreover, he would not have thought that examinations of the Institute of Builders are for quantity surveyors.

Whilst some may not approve of quantity surveyors being employed in commercial offices, it must not be overlooked that the Working Party Report on Building requires an inquiry into this matter, or that during the war years the R.I.C.S. did, in fact, change its policy and allowed its members to maintain corporate membership whilst in commercial employ.

"INCORPORATED Q.S."

London, S.E.

HAMPTON COURT PALACE

A M.O.W. Publication

MORE THAN HALF A MILLION PEOPLE visited Hampton Court Palace in 1949, and the number is expected to be greater this year with the influx of tourists from overseas. To help visitors, the Ministry of Works has issued a new booklet, illustrated by photographs and plans, which gives an account of the 400 years of British history written in the stone and brick of this Tudor, Stuart and Hanoverian home of kings. The booklet, "Hampton Court Palace," is written by G. H. Chettle, F.S.A.

Hampton Court was built in the reign of Henry VIII, by Thomas Wolsey, Archbishop of York, on a site which he acquired, on lease, in 1514, from the Order of St. John of Jerusalem. In 1529, shortly before his death, all Wolsey's lands and goods, including his manor of Hampton Court, were declared forfeit to the King. Henry VIII at once began to enlarge the house, making it one of the most luxurious palaces in the kingdom.

Wren's New Palace.

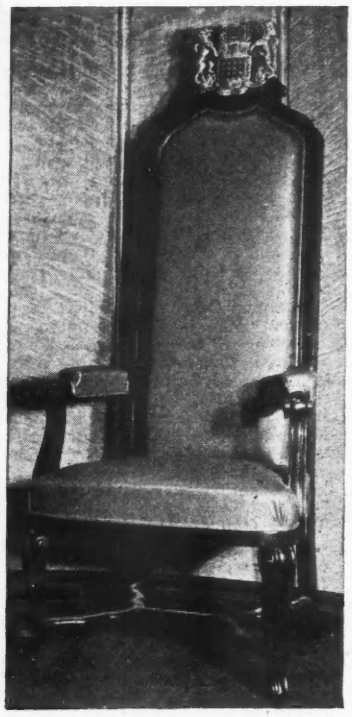
With the accession of William and Mary came the second great rebuilding at Hampton Court. Though the Tudor palace was spacious enough, it was nearly 200 years old and did not suit the taste or the convenience of the new sovereigns. Sir Christopher Wren was commissioned to plan a new palace. Many designs were made, and one scheme at least involved the destruction of the whole of the then existing buildings except the Great Hall. Work was begun in 1689. The first or Base Court and the Clock Court were not altered, but the third courtyard, round which the State Rooms and private apartments of the sovereign were grouped, was demolished to make way for the suites of rooms and galleries which now surround the Fountain Court. The new building, of brick with Portland stone enrichments, was designed in the classic renaissance style of the day, and the gardens were replanned in the formal manner of France; but beautiful and dignified as Wren's building is, it is quiet, almost domestic, compared with the pomp of such as the palace at Versailles.

Queen Mary died in 1694, and the plan for the complete rebuilding of the palace was abandoned. At William's death in 1702 the interior of the new building was not yet finished, so that the decoration of many of the rooms was done to suit the taste of Queen Anne and the first two Georges.

After the death of George II in 1760 the palace was never occupied by a reigning sovereign. Queen Victoria threw open the State Rooms to the public, while nearly a thousand rooms on the other floors of the palace form 45 separate apartments granted "by grace and favour" of the sovereign to the widows or children of distinguished servants of the Crown.

The Church and Art.

IN APPOINTING the Rev. C. B. Mortlock, F.S.A., Hon. A.R.I.B.A., to be treasurer and prebendary of Chichester Cathedral, the Bishop of Chichester states that he is anxious to revive the proper functions of the treasurer in having the care of the treasures and works of art belonging to the cathedral and also to extend the treasurer's functions to the diocese as a whole for the encouragement of good craftsmen and artists to local painters and sculptors.



The Mayor's chair.

The Rebuilding of WESTMINSTER CITY COUNCIL CHAMBER

COLLCUTT AND HAMP, ARCHITECTS

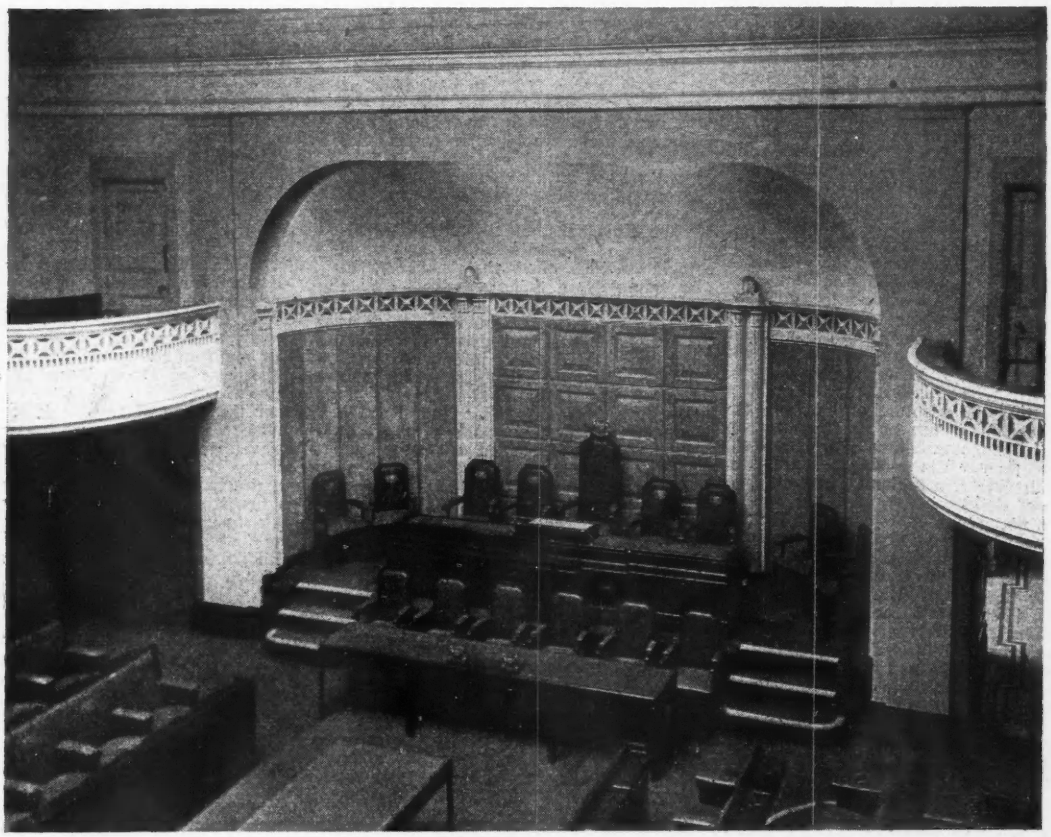
IT is ten years since the Council Chamber of the Westminster City Council was destroyed by enemy action, and it is only now that it has been possible to rebuild on the same site within the existing walls.

Before the war, the Council were considering the erection of a new City Hall on another site, but the need of a Council Chamber could no longer be denied, and it was decided that a new Council Chamber must be constructed where it previously stood, to be designed and constructed with austerity in view of the possibility of the erection of a new City Hall which, it was hoped, would be built in the near future. The architects were therefore instructed to use, as far as possible, materials and construction that would produce an economical building which could be speedily erected, so that the sum to be agreed with the War Damage Commission would meet, as far as possible, the cost of the reinstatement.

The impossibility of obtaining building licences, and the difficulties of obtaining labour and materials prevented the earlier rebuilding.

It was essential that the administrative work of the City Council should continue during the reconstruction. As the Council Chamber was in the centre of the building, with no external walls, access for labour and materials was difficult. The contractors had to organise their job from a small gantry on the street pavement, this being the only means of access to a first-floor window through which all materials had to pass. For this reason all the constructional steelwork had to be designed so that it could be delivered and assembled on site. The same difficulties had to be overcome with the fibrous plaster, joinery work, etc.

The condition of the two main enclosing brick walls to the Chamber was found, on detailed examination, to be unsatisfactory and had to be rebuilt. It would have been an advantage to increase the size of the Chamber, but practical difficulties



The Council Chamber from the gallery.

View of Council Chamber, showing gallery. *Below (right):* **The site before rebuilding commenced.**

made this impossible. However, the anteroom was enlarged, and direct approach from the existing Mayor's parlour was arranged.

The decorative scheme for the walls and ceiling of the Chamber has been designed to be in fibrous plaster with applied acoustic panels. The walls above the level of the gallery floor have been covered by acoustic materials up to cornice line. Special provision had to be made for heating and ventilating ducts, and plaster enrichments were designed to give adequate inlets and outlets without being too obvious.

The Chamber is lit entirely from above, through the central glazed laylight in the daytime and by electric fittings directly above the laylight at night.

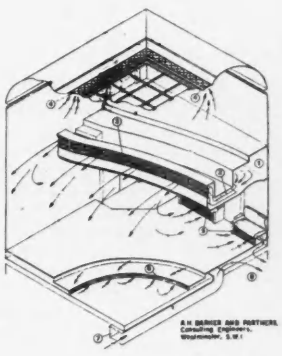
The perforated fibrous enrichment around the glazed laylight provides the air extract by means of a specially designed extract fan.

A public gallery extends across the end wall and two

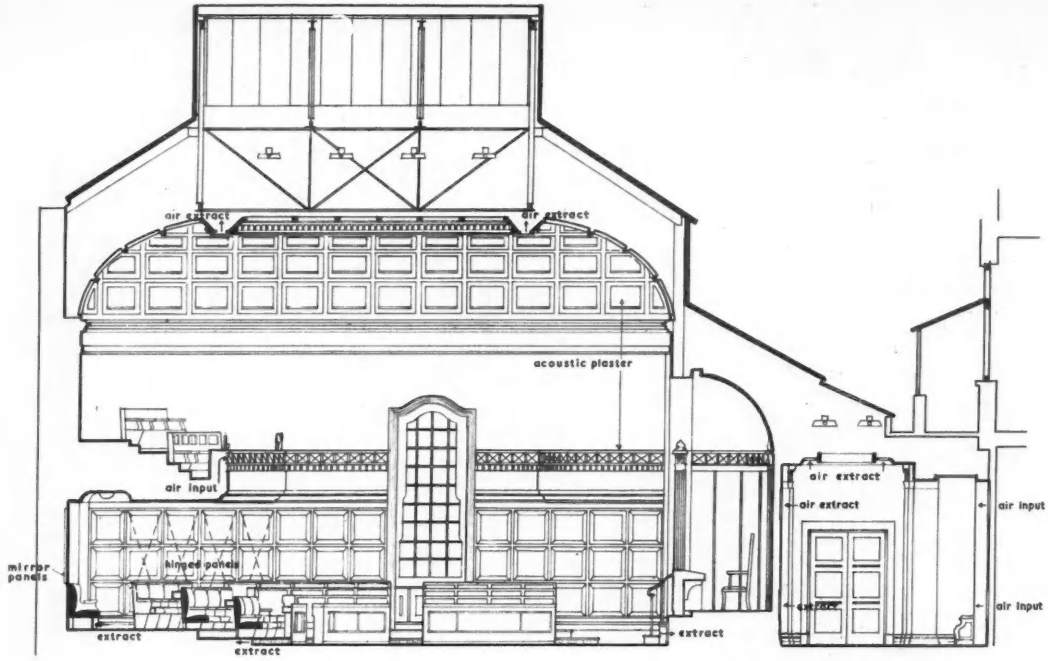
1. Balcony Void serving as main supply duct for Conditioned Air to Council Chamber
2. Separate Sheet Metal Connections and Regulating Dampers erected within Balcony Void
3. Main Inlet Grilles for Conditioned Air
4. Ceiling Grille through which vitiated air is extracted to atmosphere via Roof Vent Fan
5. Air Extract Grilles under Settees, with Regulating Dampers behind
6. Air Extract Grilles in Seating Platform, with Regulating Dampers behind
7. Sheet Metal Duct under floor, connecting to Air Extract Grilles on the dais at south end of the Chamber
8. Passage of Extract Air to common duct connecting to adjacent Centrifugal Fan in basement

WESTMINSTER CITY HALL

Part View of Council Chamber illustrating the arrangement of Inlet and Outlet Grilles, forming a part of Air Conditioning System

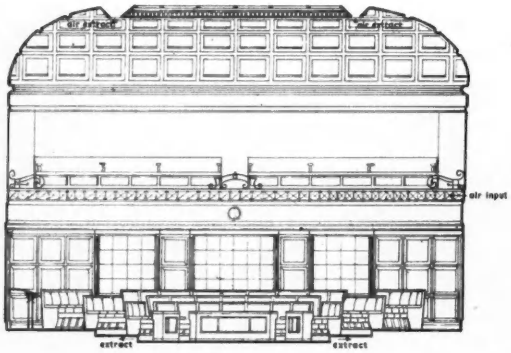


A.H. BARKER AND PARTNERS, Consulting Engineers, Westminster, S.W.1

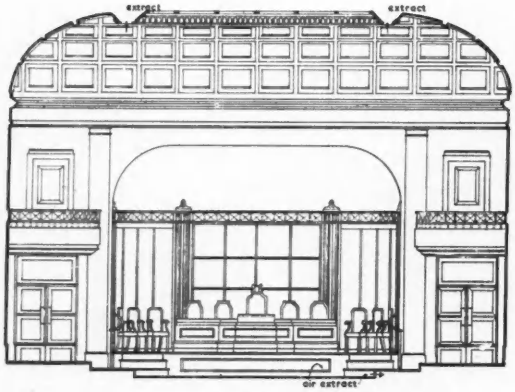


section AA thro' council chamber & ante room

scale of feet



section B-B



section C-C

Press galleries project either side of the Mayor's dais, approached from the floor above the anteroom.

The walls of the Chamber are lined with fibrous plaster panelling grained sycamore. A portion of this panelling is made to open for displaying plans and drawings. The whole of the floor of the Chamber is close carpeted. The seating and furniture are of Cuba mahogany inlaid, and the upholstery is of blue hide, with the City arms embossed on the back of each seat.

At the rear of the Chamber are three sofa seats, with mirrors over, which give a sense of spaciousness. Seating is provided for the Mayor and aldermen and also for 68 councillors and seven chief officers.

The anteroom is lighted by a glazed top light, above which are fluorescent lights. Input grilles for warmed air are planned on two side walls, with extraction by open grilles around the glazed laylight. Two telephone cubicles are provided. The whole area of the anteroom has a specially designed rubber floor covering.

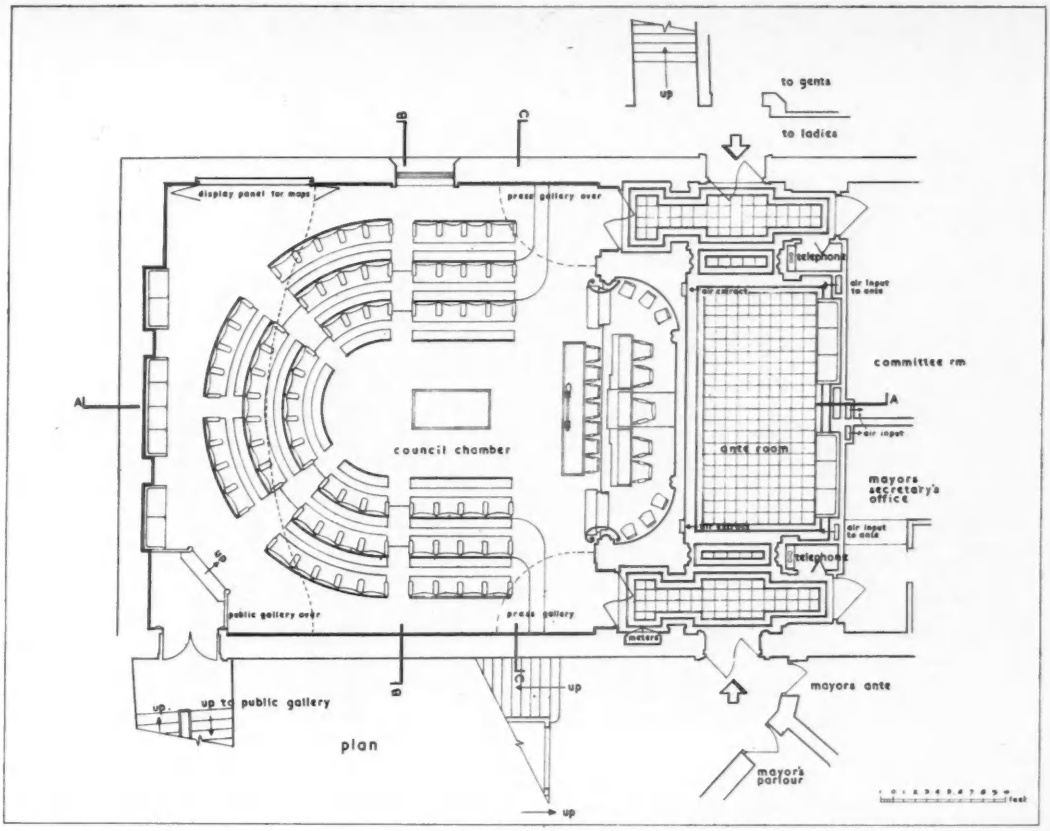
The large committee room leads from the anteroom, also the Mayor's suite and accommodation for secretarial staff.

The architects were Messrs. Collcutt and Hamp.

The plenum plant, designed by the consultant engineers, Messrs. A. H. Barker and Partners, supplies the Council Chamber and the Committee Rooms and other principal rooms with warmed, washed and filtered air.

The general contractors were Messrs. Trollope and Colls, of London, who, by careful organisation and the services of an able foreman, have overcome the many difficulties inherent in a work of this nature.

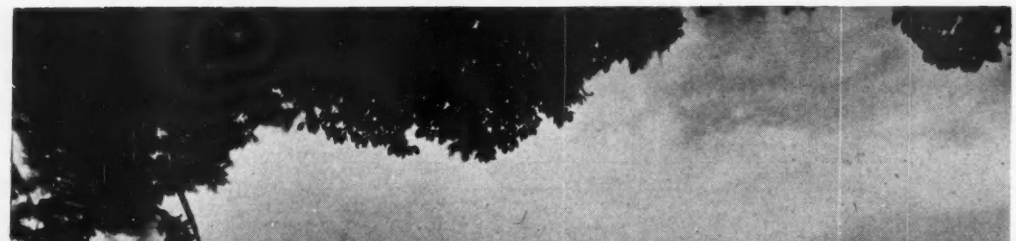
The sub-contractors were : Steelwork, Moreland Hayne and Co., Ltd. ; reinforced concrete floors, The Helical Bar and Engineering Co., Ltd. ; roofing, Robertson's Building Service ; ventilation and heating, Matthew Hall and Co., Ltd. ; ducting, J. Gardner and Co., Ltd. ; fibrous plaster and joinery, G. Jackson and Sons, Ltd. ; glazing, British Challenge Glazing Co. ; lighting, Smith and Ansell, Ltd. ; wood block floor, Hollis Bros., Ltd. ; rubber flooring, Dunlop Rubber Co., Ltd. ; ironmongery, Yannedis and Co., Ltd. ; furniture, H. H. Martyn and Co., Ltd. ; and soft furnishings, Maple and Co., Ltd.



The plan. *Below:* **The anteroom.**

THE REBUILDING OF WESTMINSTER CITY COUNCIL CHAMBER

COLLCUTT AND HAMP, ARCHITECTS

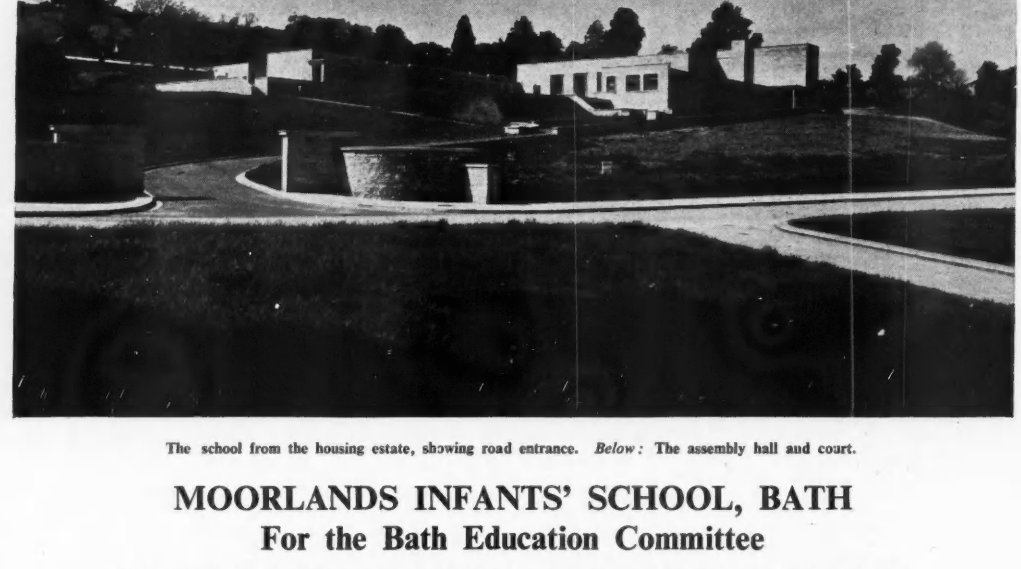


The school from the housing estate, showing road entrance. *Below:* The assembly hall and court.

MOORLANDS INFANTS' SCHOOL, BATH

For the Bath Education Committee

PICTOR, SNAILUM AND HUGGINS, F. AND A.R.I.B.A., ARCHITECTS



THE MOORLANDS INFANTS' SCHOOL is the first phase of development of a Schools Centre to serve a new traditional housing estate. A junior school is under construction to the south and sites have been reserved for a nursery school and children's playground. The open land to the south and west of the Schools Centre is now being laid out as a park and recreation ground.

The head mistress, backed by the school managers and the Education Committee, decided that the school should provide a more gentle transition between the informality of nursery school training and the formal education of the junior school. Thus the accommodation generally and equipment in particular were planned more on nursery school lines than is usual in infants' schools.

The site, which falls steeply to the north, presented particular problems in the siting of the school and the provision of adequate daylight lighting in the playrooms. Although the most level area of the site was selected and the floor levels varied by 6 ft. 6 in., a considerable amount of site preparation and foundation work was necessary.

The building was carried out under two contracts. The foundation contract included all general levelling and terracing, drainage, the boiler room and construction up to and including the main concrete sub-floors and erection of the steelwork. This contract was started in 1947 and completed in September, 1948.

The superstructure contract was started in July, 1948, and the school was handed over at the end of April, 1950.

PLANNING.—The school is for 240 infants in six playrooms. Each playroom has its own lavatory, cloakroom, stores and open-air play space *en suite* to enable the teacher to supervise all aspects of the child's activities and education. As the education is to be more on nursery school lines than the normal infant curriculum, it was essential that adequate space for equipment, teaching and supervision be allowed in the lavatory and cloakroom.

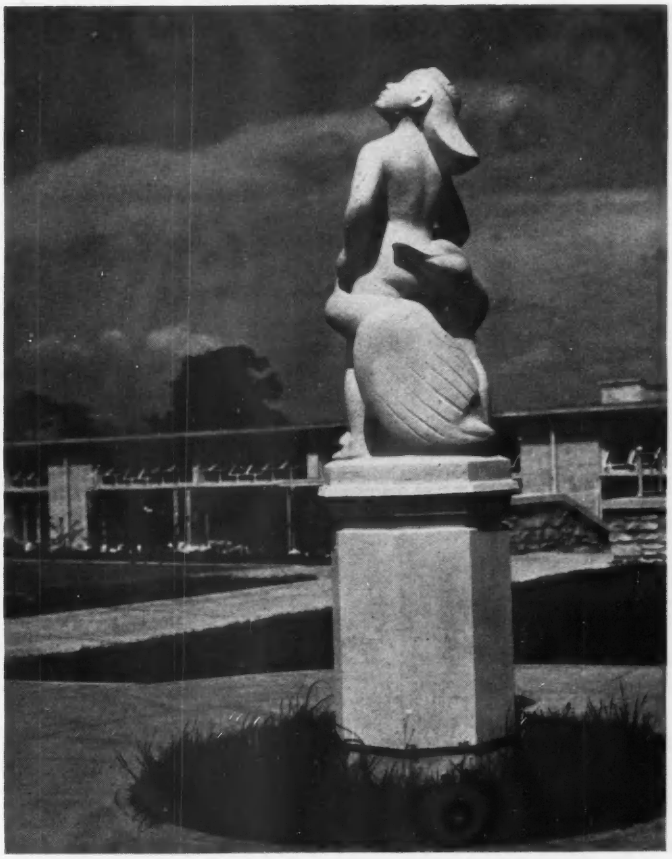
In the lavatories the equipment is normal except for the towel racks, which provide a separate space for each child's towel, face cloth, comb and mug. There is also a high level sink for the teacher's use, together with a store cupboard for clean linen, etc.

To ensure a real integration between the indoor and outdoor play spaces the main window cills were kept low and sliding and folding windows provided below the transom hood. For the full width of the room inside, a window seat is provided, enabling the children to climb in and out.

The playrooms have been planned for the informal education visualised. Each has a sink and draining-board and a small normal-height blackboard on the west wall. On the east wall each playroom has two low-level blackboards and a full-length mirror. Pinning-up boards are provided on the north wall.

Although the furniture generally was a separate contract, all details were discussed with the architects and all the various items of furniture and equipment allowed for. A considerable amount of furniture was supplied under the main contract as built-in fittings.

The assembly hall was originally designed for a stage, but this was not allowed by the Ministry on account of the timber required. As most of the children will rest in the hall for a period after lunch, it was necessary to provide storage accommodation for the beds and trolleys. These were originally planned to slide in under the front of the stage, and now are parked behind dwarf walls at the end of the hall. The blankets, one for each child, are kept in racks spaced out along the walls of the hall with the children's 12-in. cube stools underneath. Gymnastic activities are supplemented by the Southampton climbing apparatus, which folds back into one of the bays.



The Swan Princess, in Hartham Park stone. Mrs. J. Massingham, Sculptress.

During the warmer weather it is intended that some of the children will rest on the court outside the assembly hall and the ramps down from the assembly hall terrace were provided so that the beds could be wheeled out on the trolleys. The trees in the court have been provided to supplement the shade on the court given by the buildings.

The youngest children in the eastern-most room will rest in their playroom and a bed and blanket store has been provided across the corridor.

Adjoining the store room is a general-purpose utility room fitted out with work-bench, sink, gas ring, etc., where the staff can carry out minor repairs and repainting of the toys and equipment and the children can also come in to make things. A normal domestic gas cooker is also provided in this room for the children's use.

The dining-room has been provided to regulation size and, with the kitchen, has been planned so that playrooms 1 to 3 (the younger children) can have playroom feeding. This will mean that the mid-day meal will be one sitting only. It is intended that the food be served by the teaching staff from a table standing in front of the servery. Thus it was possible to place the hot cupboard on top of the counter, greatly facilitating the transfer of food and plates from kitchen to dining-room. An opening is left on either side of the hot cupboard for the passage of other items.

The space under the counter is taken up with cupboards for cutlery and drinking mugs. These are kept in trays which can be taken out from either side. The "dirties" hatch is outside the servery and is at a height suitable for the children to return their plates.

Sliding and folding doors are provided to shut off the servery when not in use, and the blank space over has been used for a montage panel of the Pied Piper, carried out by B. Ward-Turner, F.I.B.D., assisted by F. R. Huggins, A.R.I.B.A.

Adjoining the kitchen block is the laundry, equipped with a tub and sink, Bendix washing machine and gas drying cabinet. The provision of this unit and the equipment is justified by the fact that it will deal with the laundering of most of the primary schools in the city.

The medical inspection suite has been designed as a district clinic and has therefore been provided with a separate entrance, a large waiting room and an open-air waiting space with a pram shelter. There are also shut-off doors in the main corridor to isolate this unit from the rest of the school.

Externally the layout has been adapted to the steeply sloping ground. The extensive use of rubble retaining walls links up with the treatment of similar problems on the housing estate. The stream is fed by water collected from two springs further up the hill, and various other springs encountered in the excavations have been connected into the system.

A separate sand-pit has been provided

The stream and outside play spaces to playrooms.

for the youngest children near playroom 1 and the larger sandpit will serve the remaining children, but will be used mostly by the younger children in playrooms 2 and 3.

The subject of the statue is the Swan Princess, and it was carved in Hartham Park stone by Mrs. J. Massingham.

CONSTRUCTION.—The foundations, for which bricks were not authorised, were carried out in concrete blocks. To avoid the use of shuttering, retaining walls were formed of concrete poured between two skins of concrete blocks.

The general superstructure in the playrooms, kitchen, dining-room, assembly hall, entrance hall and tank room is of steel framing, using standard r.s.j. units owing to the then shortage of light sections. The external walling is 10-in. cavity with 4-in. Doulting stone rangework externally and 4-in. concrete blocks internally. All window and door surrounds, copings, cills, and moulded members are of Vici cast stone. The canopies to external doors and eaves units are formed with cast stone units tied back into reinforced concrete slabs. The roofing and suspended floors throughout are of Myko construction, a system of light concrete beams with a 1-in. foam slag casing filled between with 2-in. foam slag slabs. Over this a 1½-in. structural screed is laid which forms the compression member to the beams. The ceilings in playrooms, dining-room, assembly hall and all corridors are of fibreboard and the remainder of plasterboard nailed direct to the foam slag casing to the concrete beams.

All roofs are finished with asphalt and white spar chippings.

The daylight factor in the playrooms is 5 per cent. for all the working space in the room. This has been achieved by full-height windows on the south side with the clerestory windows on the north side formed with vertical upstands and 30 deg. patent glazing over.

INTERNAL FINISHES.—All floors except the kitchen, lavatories and stores are Granwood. The kitchen and lavatories are quarry tiles and the stores granolithic.

Generally, all walls are finished in two-coat plaster, painted one coat of Duramatt. The lavatories adjoining the playrooms are tiled to a height of 4 ft. 9 in. The cloakrooms and dining room have gloss-painted dadoes and the kitchen is painted gloss to all walls and matt to the ceiling. Stores are finished fair face and treated with cement paint.

The colour schemes for the main rooms are as follows:—

Playrooms 1, 2 and 3: Blackboard wall complete, deep coral ; toy cupboard wall, dove suède with doors and architraves Wedgwood blue; corridor wall, ceiling and window wall, pale biscuit; painted unit furniture, Wedgwood blue.

Playrooms 4, 5 and 6: Blackboard wall complete, mist grey; toy cupboard wall, pale Adam green with doors and architraves in deep sage green; corridor wall, ceiling and window wall, pale blush ; painted unit furniture, deep sage green.

Assembly hall: Ceiling, beams and piers, pale Wedgwood blue; wall panels, pale coral; doors and furniture, heather grey; architraves and rails, pale jade green.

Dining-room: Ceiling, pale coral; walls, mist grey; dado, deep coral; servery wall, Wedgwood blue; doors, Wedgwood blue and heather grey.

SERVICES.—Heating and hot water are by means of fully automatic gas-fired boilers. Radiators are used in all rooms, but in the playrooms these only supplement the under-floor heating coils.

Intercom telephones are provided for all playrooms, head mistress, secretary, kitchen manageress and medical officer.

Electric clocks are provided in all main rooms, and all playrooms have power points for electrical equipment. Power points are also provided at skirting level in all corridors for the operation of the electric floor polisher. Tungsten lighting is used throughout.

The assembly hall is wired for sound transmission from the projector room.

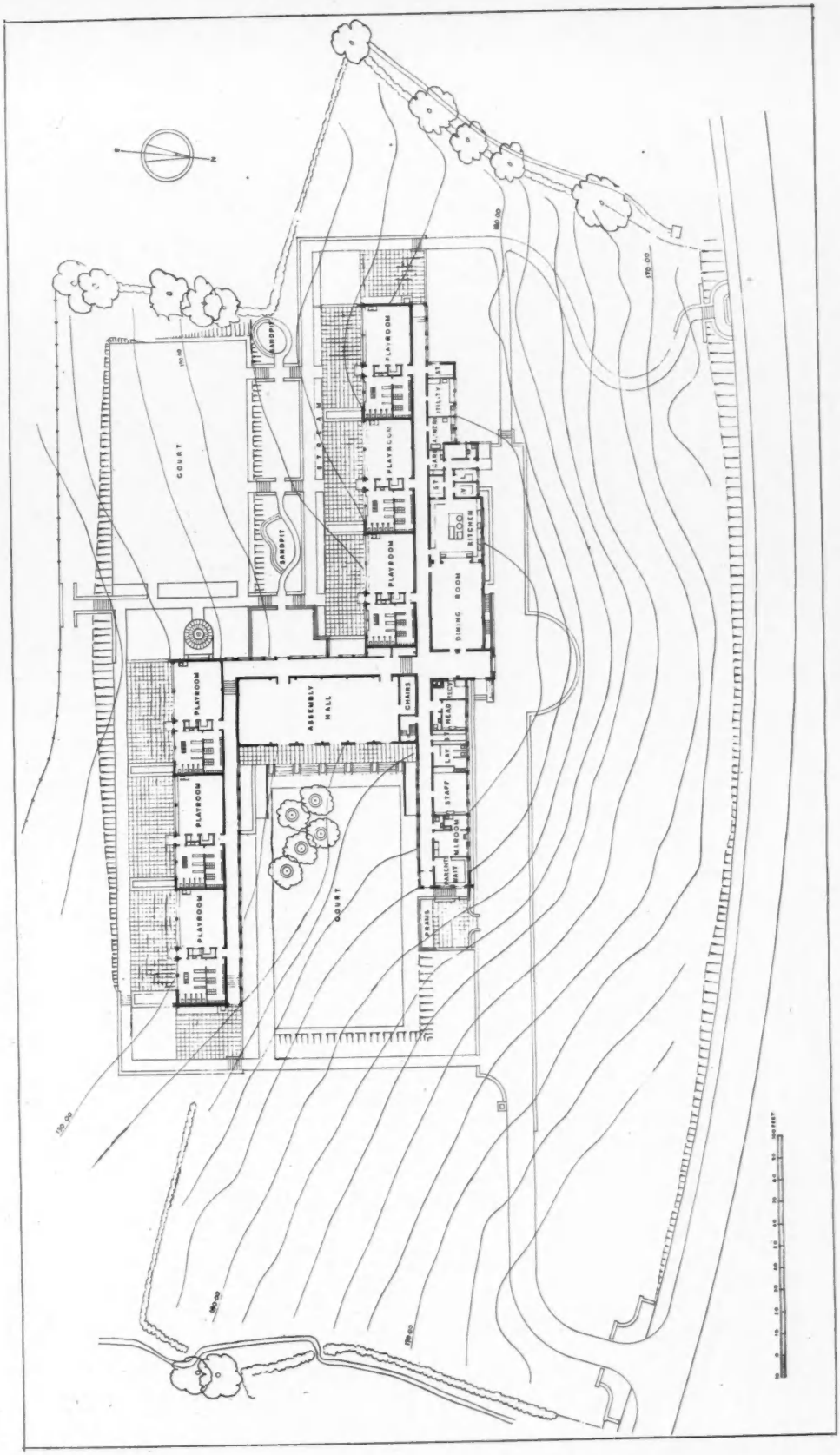
All main services are carried in creepways underneath the corridor floors and there are branch ducts with removable covers to the rooms as necessary.

The building was designed by T. W. Snailum, F.R.I.B.A., A.A.Dip., and was carried out by R. A. Le Fèvre, A.R.I.B.A., A.A.Dip., assisted by F. R. Huggins, A.R.I.B.A.—all partners in the firm. The quantity surveyor was W. G. Nixey, F.R.I.C.S., and the heating and electrical consultants, Hoare, Lea and Partners.

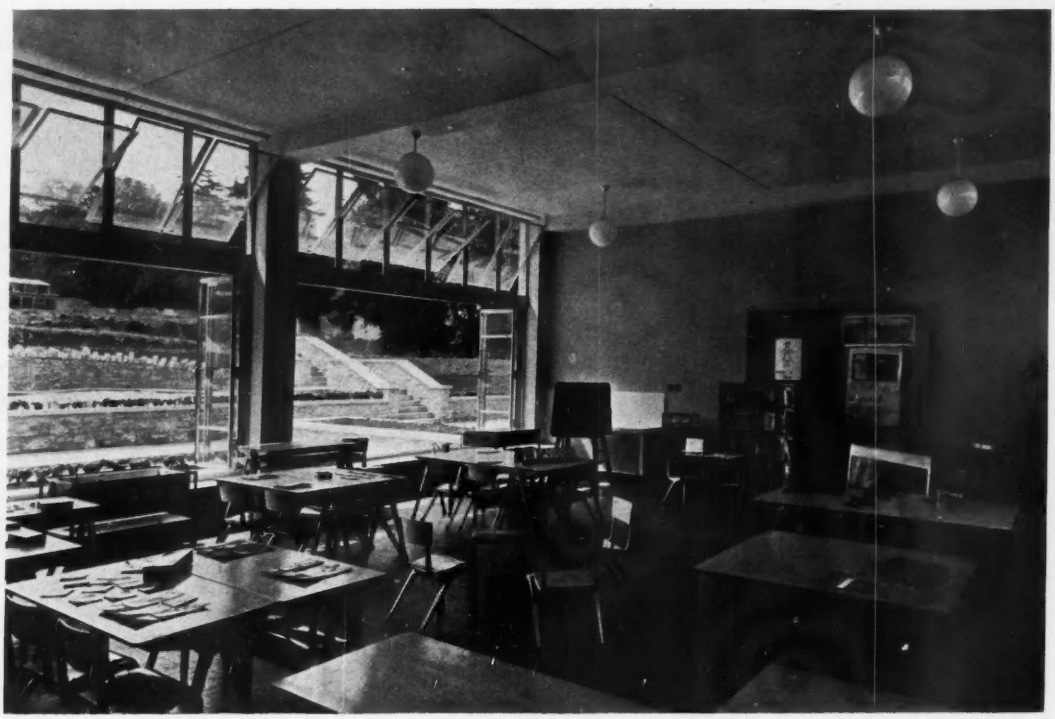
The clerk of works was Mr. L. H. Swallow and the general foreman, Mr. W. G. C. Smith.

The main contractors were (superstructure) Messrs. J. Long and Sons (Bath), Ltd.; (foundations) Messrs. Ernest Ireland, Ltd.

The sub-contractors included: Heating and hot water, Spry and Holman, Ltd.; electrical, H. L. Bush and Co., Ltd.; steelwork, Dawnays, Ltd.; Doulting stone, Bath and Portland Stone Firms, Ltd.; Vici cast stone, Bristol Stone and Concrete Co.; precast concrete roofs and floors (Myko units), Bath and Portland Stone Firms, Ltd.; flooring and duct covers, Granwood Flooring Co., Ltd.; tiling, wall and floor



MOORLANDS INFANTS' SCHOOL, BATH. PICTOR, SNAILUM AND HUGGINS, F. AND A.R.I.B.A., ARCHITECTS. The plan.



Interior of playroom. *Below*: Dining-room, with servery doors closed.

Carter and Co. (London), Ltd.; windows, Vickers-Goodwin, Ltd.; window control gear, Arens, Controls, Ltd.; ironmongery and fittings, Gardiner, Sons and Co., Ltd.; sanitary fittings, Wm. E. Farrer, Ltd.; cloakroom fittings, Lockerbie and Wilkinson, Ltd.; wrought iron-work, Ironside Engineering Co.; asphalt roofing and playgrounds, Asphalt Specialists, Ltd.; paint (suppliers), Fleetwood Paints, Ltd.; (sub-contractors), Alfred Bagnall and Son, Ltd.; plastering J. H. Moss and Sons; gas supplies, South-Western Gas Board; roof lights and glass bricks, J. A. King and Co.; and furniture, Educational Supply Association, Ltd.

MOORLANDS INFANTS' SCHOOL. PICTOR, SNAILUM AND HUGGINS, F. & A.R.I.B.A., ARCHITECTS

THE ARCHITECTURAL ASSOCIATION

Secondary Education and the Arts

THE extent to which contemporary curricula in secondary schools are suitable for the student intending to make a career in the fine or applied arts, was the subject of a discussion at the Architectural Association on May 31. MR. HENRY BRADDOCK, A.R.I.B.A., president of the Association, was in the chair and the principal speakers were: MR. T. F. COADE, M.A. (headmaster of Bryanston School), MR. JOHN HILLS, M.C., M.A. (headmaster of Bradfield College), and MR. JOHN NEWSON, M.A. (Hertfordshire County Education Officer).

The chairman briefly opened the discussion and called on Mr. H. Furneaux Jordan, F.R.I.B.A. (principal of the A.A. School of Architecture) to introduce the speakers to the meeting.

MR. JORDAN explained the origin of the discussion. The Architectural Association, he said, in selecting students, had to look for people with a visual sense and a little education. They held examinations and interviews, and found an extraordinary lack of candidates who had been given really serious advice on what they should do with their lives. We were all concerned with what was happening in our civilisation to the visual arts. A visiting lecturer to the A.A. that week had said that in a world dominated by business men and scientists, artists and aboriginals were only tolerated on the fringe. It was inevitable that education should be dominated to-day by science and industry, and art was regarded as something to enjoy, and not as something of which you could make a career. This was the case even with those who had an enlightened view of our educational system.

Æsthetics at School.

MR. COADE said that educationalists were at last beginning to realise that serious attention should be paid to the æsthetic side of school life. Neglect of this had produced a large number of conscientious barbarians, a number of whom had achieved and now held responsible administrative posts. It was beginning to be understood that appreciation of beauty was essential to civilised life, and that some knowledge of arts and crafts could vitalise school life so that academic and athletic results were improved as the result of a generous and more lively spirit. In his own case, while at school he had sometimes been dismayed or annoyed to find that there were a few boys who enjoyed classical music and lectures on art; it was only when he was 30 years old that he found out what he had missed. He had then resolved that if ever he became a headmaster no boy of his should leave school without an effort being made to teach him the real and ultimate importance of the visual arts.

The call to be an architect, for the boy who had the capacity to be one, was of supreme importance. Not only did the present generation need to live among beautiful and functional buildings, but there needed to be a wider recognition of the fact that the place of architecture was in the very centre of modern creative activity. Architecture was the reference point which gave a new significance to all the other arts.

MR. HILLS said the questions before the meeting were: There were a certain number of students coming to architectural schools; were they the right ones? Were they the only right ones? Did the present system miss some who would be as good or better? Assuming those who came were the right ones, had they been put on the right road? He was not sure that it was the business of a schoolmaster to advise a boy either to be or not to be an architect. He might try to guide the boy into dealing with certain forms of ideas, but to tell him that he should or should not be an architect was dangerous. The modern age had introduced a system of departmentalisation into schools, and one result was that the boy with artistic capacity was driven into a narrow outlook, living as much of his life as possible in the drawing school. The average boy living an ordinary active busy school life was not really ready for full artistic appreciation; it was the duty of the boy's teachers to open his eyes, to get him to look at things, but the boy was not ready for full appreciation. Sometimes that development did not come until much later.

Misguided Efforts.

MR. NEWSON said the place of the visual arts in English secondary education, so far as the national system was concerned, was deplorable. Art was looked upon as something apart from the main classic stream which was education. The importance of æsthetic education was being slowly realised in the schools but, generally speaking, the vast mass of children in English secondary schools were malformed and mutilated so far as the emotional side of education was concerned, and misguided attempts to put this right sometimes did more harm than good. As to architects' education, having worked with alternating harmony and discord with architects for ten years, he thought their education should be a general one.

Architecture, like the other arts, was closely associated with the historic and economic forces of the past and future, and it was important that architects should be aware of those forces. A man could not be a proper architect unless he had studied seriously some of the works of the great men whose opinions had formed modern society: such as Plato, Aristotle, Sir Thomas Aquinas and Karl Marx. Most of the buildings being built to-day were designed by people who were aware of the social and historical background of the situation. Their success had been measured more by their general educational background than by their particular æsthetic appreciation. They had æsthetic appreciation but they could also see the work of the architect in the wider field. The potential architect while at school should be given opportunities to practise painting, drawing, modelling, sculpture, etc. The intellectual ability of the architect should be second to none.

Comprehensive Training.

MR. F. V. LIDDALL (Art Master of Bradfield College) said that he had once asked Sir Edward Lutyens about the training of architects. Sir Edward had replied, "If you make the boy into a first-class artist he will never be capable of rendering a bad building." If boys were trained in all the various media—oil, watercolour and so on—they would appreciate art in later life in spite of all the regulations they would have to contend with if they became architects.

MR. M. BRAWNE said he had spent the afternoon looking at some of the schools that were under Mr. Newson's care. They were rather rigid buildings which did not fully exploit all the wonderful things that architecture could do.

MR. NEWSON said that several schools had been built in Hertfordshire which were not rigid. The architect could not go very far ahead of public opinion; if he was dealing with something paid for out of rates and taxes, he must go slowly. The Hertfordshire schools were not the full demonstration of the ability of the architect; they were about as far as a public authority could go in the light of public opinion.

MR. HUGH MORRIS thought that secondary education should not be playing about with paint. If a man's life was to be spent creating things, the primary consideration in his education was a workshop with a reasonably good set of tools. Another point was that behind the question of how people should come into architecture lay the matter of equality of opportunity. Such equality existed only in a very limited sense. The primary criterion was ability to pay rather than anything else. It would be years before we arrived at anything approaching equality of opportunity.

Watching the Craftsmen.

MR. GUY GREY WORNUM, F.R.I.B.A., said the general education he received at Bradfield had stood him in good stead. He had always intended to be an architect and was extremely fortunate in the first year or two in that the chapel was being enlarged. He had never forgotten the thrill of watching the craftsmen working. There were a few people knapping flints—a highly skilled operation—and there was one of the finest blacksmiths in the country forging hinges, and so on. Timbers for the roof had been cut so accurately that they fitted exactly when put in place. A similar experience was something which any school should be able to provide for boys who were interested. It would be a little difficult in the case of secondary schools completed before the students went to them; but in the case of public schools which were being constantly modernised it might be done. He could not imagine anything better for the student of architecture than gaining in this way a first-hand experience of handicraft and building.

THE PRESIDENT said that there would always be young men coming forward who would become good architects. He would advise their guests to forget architecture from the point of view of being a special occupation requiring a special education. He would rather they realised that the work of the architect was to a degree controlled by people, coming chiefly from secondary schools, who became members of local authorities. These people had tremendous power. We needed in educational circles a definite and agreed policy which would produce a very gentle and long-term education of the public as a whole in the appreciation of the visual arts, and also an appreciation of scientific planning and construction.

The local authority, whose criticism the architect had to face, consisted of ordinary business men. To them an education should be directed by a long-term policy, long-term because before they could be dealt with it was necessary to deal with the teachers who would teach them. Let educationalists forget architecture for the moment as a special thing, and direct the attention of the general student who came to their schools to the visual arts.

BATTERSEA PARK PLEASURE GARDENS

Festival of Britain Arrangements

PLANS for the Festival Pleasure Gardens in Battersea Park are aimed at providing facilities for entertainment, refreshment, relaxation and enjoyment to suit all tastes, all ages and all pockets; a place of resort for Londoners and all visitors to London during the summer of 1951.

We are informed by Festival Gardens, Ltd., the company formed to be responsible for this project, that arrangements are now being made for the appointment of a number of private architects who will prepare designs for the various buildings, features, etc., to be erected in the Gardens. The Presentation Committee of the company still have a number of appointments to make.

After approval has been given by the board of the company, the architects' names will be announced, probably in about a fortnight's time. Mr. James Gardiner, O.B.E., R.D.I., is the company's chief designer for the Gardens, and will be responsible for the complete layout and the co-ordination of the various designs submitted.

The Pleasure Gardens are planned to occupy a reserved area of about 37 acres (about one-fifth of the total area of the park) at the centre of the riverside edge of the park, for about one-third of its length, and reaching south to the bandstand towards the centre of the park.

The Gardens will be laid out in a number of main areas: the main vista, the centre garden, the riverside, the main promenade, the amusement park, the children's section, etc., all sited in balanced relation to each other and planned in harmony with the existing trees and general character of the park.

Landscape, Gardens and Flowers.—The whole of the Pleasure Gardens will be laid out with every attention being given to landscaping. Flowers and flower-beds will be sited in as many places as possible and shrubs and climbing plants will be used both for their own sakes and also as part of the treatment of many of the buildings. Three areas, however, will have special attention: the riverside strip, which will be planned with formal flower-beds and fountains; the main vista, where, in addition to the architectural treatment, trees, shrubs and flowers will be an important part of the picture; and the centre garden.

The Main Vista.—To the west will comprise a large paved courtyard entered by steps and terraces from the main promenade and bounded by pavilions housing a variety of features as well as cafés, arbours, etc.; a large ornamental lake with fountains and other water displays and culminating at the southern end in a special architectural feature, part of which it is expected will be a spectacular fountain display. Also at this end of the vista will be the firework stage.

The Centre Garden.—Here, in addition to a large grass lawn, there will be continuous displays of seasonal flowers.

The Riverside Strip.—In this area, in addition to the laid-out gardens, there will be a tea pavilion, large cafeteria, a restaurant and the covered theatre.

The Main Promenade.—This will be the existing carriageway and will be the "feature shopping centre," on either side of which there will be gaily designed shops, display cases and pavilions.

The Children's Section.—This section will be devoted entirely to the entertainment of children and will include a specially-designed milk bar.

The Amusement Park.—The entire south-west corner of the reserved area will be devoted to the amusement park or fun fair. Entered from the main promenade by a gaily designed "piazza," the fun fair will contain a collection of rides, games and side shows.

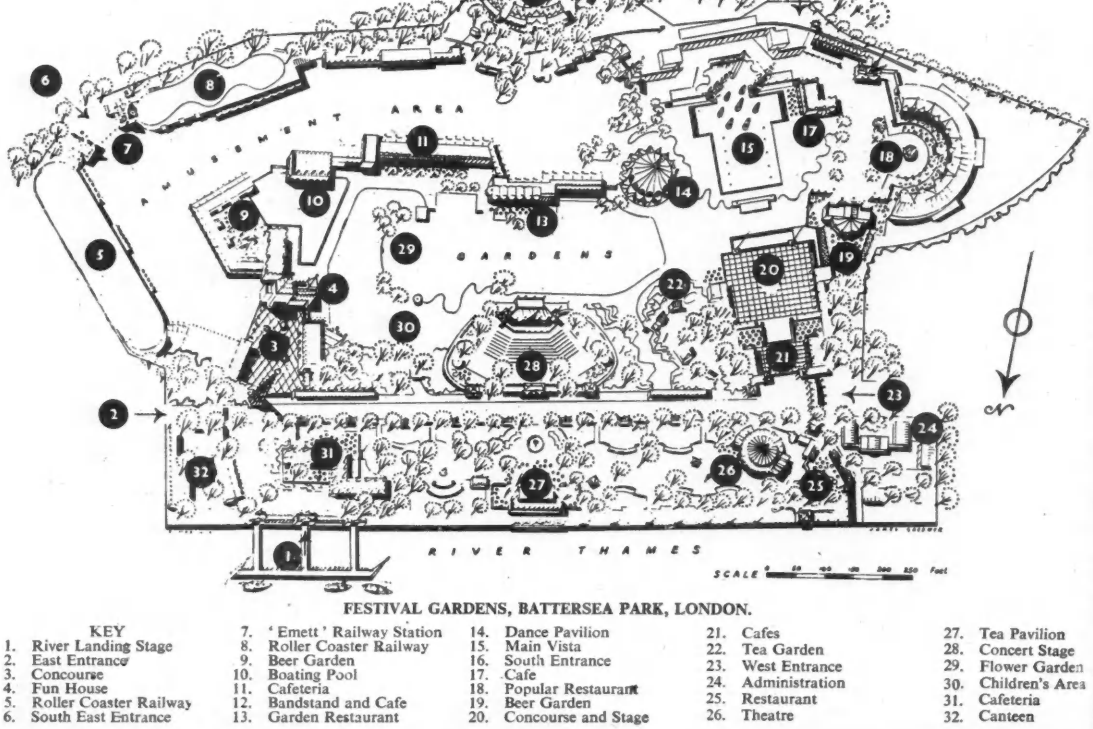
Seats.—Chairs of various designs, many free and others on a normal hire charge as in London parks, will be available throughout all the above areas.

Eating and Drinking.—The restaurants, cafeteria and snack bars conveniently sited throughout the Gardens will provide eating and drinking facilities in great variety. It is hoped that special features will include a de-luxe restaurant, a continental café and a rustic tea house. There will be three beer gardens, and there will also be small kiosks for soft drinks, etc.

Entertainment.—In the theatre on the riverside strip the attractions will include puppet shows, conjuring performances for the children during the day, and during the evening alternating performances of comic opera, melodrama and a "Victorian music hall." In the large open amphitheatre, which will be provided with a fully equipped stage, there will be displays, exhibitions, etc. There will be an open-air stage on the main vista. To the south of the centre garden there will be a dance pavilion.

Illuminations and Fireworks.—Illuminations, special lighting and coloured fountains are to be provided for displays after dusk.

Special Features.—At strategic positions throughout the Gardens will be placed novel features such as a grotto, a musical tower, etc.



FESTIVAL GARDENS, BATTERSEA PARK, LONDON.

KEY

1. River Landing Stage
2. East Entrance
3. Concourse
4. Fun House
5. Roller Coaster Railway
6. South East Entrance
7. 'Emett' Railway Station
8. Roller Coaster Railway
9. Beer Garden
10. Boating Pool
11. Cafeteria
12. Bandstand and Cafe
13. Garden Restaurant
14. Dance Pavilion
15. Main Vista
16. South Entrance
17. Cafe
18. Popular Restaurant
19. Beer Garden
20. Concourse and Stage
21. Cafes
22. Tea Garden
23. West Entrance
24. Administration
25. Restaurant
26. Theatre
27. Tea Pavilion
28. Concert Stage
29. Flower Garden
30. Children's Area
31. Cafeteria
32. Canteen

THE TOWN AND COUNTRY PLANNING ACT, 1947

The Town and Country Planning General Development Order and Development Charge Applications Regulations, 1950 (Statutory Instrument, 1950, No. 728)—3

By NORMAN P. GREIG, B.A., Barrister-at-Law, F.R.San.I., F.I.Arb., etc.

IN the previous article we dealt with Permitted Developments, showing how they were subject to "standard" and special conditions. Article 4 of the Order contains **Directions restricting permitted development.**

ARTICLE 4. (1) If either the Minister or the local planning authority is satisfied that *it is expedient that* development of any of the classes in the First Schedule (already considered) should not be carried out in any particular area, or that any particular development in any of the classes should not be carried out unless permission is sought on an application in that behalf, the Minister or L.P.A. *can direct that the permission granted under Article* 3 *shall not apply* to all or any class in any particular area, or to any particular development. But by subclause (2) a direction by a L.P.A., as above, requires the approval of the Minister with or without modifications, subject to certain exceptions where the approval of the Minister is not required (buildings of special architectural or historic interest, etc.).

(3) Notice of any direction applying to all or any of the classes in a particular area are to be published in a local newspaper and in the "London Gazette," and such notice is to give a concise statement of the effect of the direction and say where a map of the area, etc., can be seen. In regard to *particular developments*, notice of any direction is to be served by the L.P.A. on the owner or occupier of the land affected. By Sub-Clause (5) any direction in force before May 22, 1950, under Article 4 of the general Development Order, 1948, is to remain in force as though it were a direction under the new Order.

Sub-Clause (6) treats of the carrying out of emergency developments in the First Schedule or to the carrying out of works by statutory undertakers as detailed in this sub-clause.

Applications for planning permission and applications to determine whether permission is required (ARTICLE 5, AND SECOND SCHEDULE). Article 5 is important as providing for a new form of application *without submitting full details of proposed building operations.*

Briefly, then, a person asking for planning permission must do so on a form issued by the L.P.A., and obtainable from the L.P.A. or the local Council. In general, it will include the particulars required, have a plan annexed identifying the particular land, and any other plans and drawings necessary to describe the development (though the L.P.A. may require other copies (not more than three) of the form, plans and drawings as well as further information they require to enable them to determine the application). But (by Sub-Clause (2)) an application referred to as an *"outline" application* can be made for the erection of buildings where the subsequent approval of the authority in regard to *siting, design or external appearance, or means of access,* will be required. In those cases *particulars and plans* concerning the above matters are not required, and permission may be granted, with or without other conditions as follows:—

(1) If permission is granted, it will be stated that it is granted on an *outline application,* but the approval of the authority will still be required in regard to matters reserved before any development is actually commenced.

(2) If the authority consider that, considering the circumstances of the case the application for permission *ought not to be considered separately* from the *siting, design or external appearance,* etc., they must tell the applicant within a month of receiving the outline application that they cannot entertain it, and state the matters to which they require further information before they can decide. The applicant can then either supply the information required or appeal to the Minister under Section 16 (3) of the Act.

(3) This Sub-Clause requires that an application for an approval, as mentioned above, is to be in writing, with particulars, plans and drawings, together with any additional number of copies of application, plans and drawings as were required in regard to the application for permission.

By (4) applications to determine whether permission is required (Section 17 of the Act) are to be in writing and must contain a description of the operations or change of use proposed (both being developments), and of the land.

(5) Applications are to be made, according to where the land is situated, to the Common Council of the City; the L.C.C., in the case of other land in the County; and to the County Borough Council or District Council, where the land is not in the administrative County of London, who will forward it to the L.P.A. to whom it is made, where necessary.

(6) The application having been received, the L.P.A. will acknowledge it substantially in the terms contained in the Second Schedule, Part 1.

(7) A L.P.A. can require the production to an officer of the L.P.A. of evidence of verification of particulars given in the application.

(8) *Notice of Decision.* This, as a rule, is to be two months (or some agreed extended period), but in certain other classes (e.g. Class XIX (Mineral Undertakers)) can be as long as 30 months.

(9) (a) In case of an application for planning permission or approval, and the L.P.A. grant it subject to conditions, they must *give reasons in writing* and send with the decision a notification in the form contained in Part II of the Second Schedule (to which reference should be made); (b) Where, on an application for a determination under Section 17 (see above) the L.P.A. determine that the operation or change of use is development, *they must state the grounds* for their determination, at the same time informing the applicant that if he is aggrieved by their decision, he can appeal to the Minister (under Sections 16 and 17 of the Act) within a month.

(10) If a L.P.A. give permission for development unconditionally or with conditions, and if an application to the Central Land Board for a determination as to *development charge* was attached to the application, the L.P.A. must send to the C.L.B. a copy of the application, plans and documents, etc., and extracts from any correspondence that can explain or qualify the application or the permission.

(11) A L.P.A. must furnish to the Minister (and to such other person *as may be prescribed by directions given by the Minister under this Order*) any information in regard to applications made to them under Article 5, and information as to how any application has been dealt with.

Directions restricting the grant of permission (ARTICLE 6). (1) The Minister can give directions restricting the grant of permission by a L.P.A. during any specified period, in regard to any development or any class of development as specified in those directions.

(2) A L.P.A., having received a direction, must, in dealing with applications for permission to develop, deal with them so as to give effect to the terms of the direction.

(To be concluded.)

SOCIETIES AND INSTITUTIONS

Hants and I.O.W. Architectural Association

MR. ERNEST BIRD, F.R.I.B.A., retiring president of the Hampshire and Isle of Wight Architectural Association, announced at the biennial general meeting, held recently at the Polygon Hotel, Southampton, that the council had elected Mr. H. S. Sawyer, M.C., F.R.I.B.A., of Winchester, as president for 1950-52, with Colonel R. F. Gutteridge, T.D., F.R.I.B.A., of Southampton, and Mr. A. E. O. Geens, F.R.I.B.A., of Bournemouth, as vice-presidents.

In his report on the session 1948-50, Mr. John S. Fowler, A.R.I.B.A., hon. secretary, stated that membership now stood at 360.

Institution of Structural Engineers

Election of Officers

AT THE ANNUAL GENERAL MEETING of the Institution of Structural Engineers, held on May 24, the following honorary officers and members of the council were elected for the session 1950-1951:—

President—Mr. J. E. Swindlehurst, M.A.; *Vice-presidents*—Messrs. W. C. Andrews, O.B.E., E. Granter, B.Sc., Lt.-Col. R. F. Galbraith, M.C., B.Sc.(Eng.), S. B. Hamilton, M.Sc., S. Vaughan, B.Sc., Lt.-Col. E. J. Hamlin, D.Sc.

Honorary editor—Mr. W. H. Woodcock, F.C.S.; *Honorary secretary*—Mr. J. Mason, B.A.; *Honorary treasurer*—Professor W. Fisher Cassie, M.Sc., Ph.D.; *Honorary curator*—Mr. J. Singleton-Green, M.Sc.; *Honorary librarian*—Mr. L. E. Kent, B.Sc.

Members of council—Messrs. W. Bates, M.I.Struct.E., J. Guthrie Brown, M.I.C.E., B. A. E. Hiley, M.I.C.E., Dr. F. G. Thomas, Ph.D., B.Sc.; *Associate-members of council*—Messrs. A. R. Collins, M.B.E., D.Sc., Ph.D., A. J. Francis, M.Sc.(Eng.).

The new council takes office in October.

OBITUARY

Clement Stretton, F.R.I.B.A.

We regret to announce the death on May 30 of Mr. Clement Stretton, F.R.I.B.A. (retired), of Knighton-road, Leicester. Mr. Stretton became an Associate of the R.I.B.A. in 1901 and a Fellow in 1922. He was hon. secretary of the Leicester and Leicestershire Society of Architects from 1910 to 1925.

Among his principal works were various houses and factories, chiefly in Leicestershire, and housing schemes for the City of Leicester; also a Roman Catholic church at Aylestone (Leicester).

Mr. Stretton was 70.

RADIANT HEATING IN LARGE-SCALE BUILDINGS

A Survey of Recent Progress

By LEO WALTER, A.M.I.Mech.E., A.M.I.H.V.E.

RADIANT heating, or panel heating, as it is generally called in this country, where it originated many years ago, has been used for warming many medium-sized and larger public and private buildings. Its application to large factory structures is, however, not so advanced here as in the U.S.A., apart from wartime factory buildings. It might, therefore, be of interest to plant engineers, architects and building contractors to give a brief survey of what progress has been made during and since the war.

The present trend is to embody heating coils direct into the building structure, and invisible wrought iron pipes are widely used for providing the large heating surfaces required for factory buildings.

It is not intended here to elaborate a comparison between radiant heating systems and other modern systems, such as air-conditioning or high-pressure hot water heating, or factory heating systems using steam. It can be safely stated, however, that large radiant heating systems for new factory buildings can hold their economical position against any other type of factory heating system, provided circumstances are favourable. To decide the latter is the combined job of the architect and the consulting engineer. Assuming that the decision has been in favour of radiant heating, the architect is mainly interested in how to fit a heating system, which is an integral part of the building structure itself, into the general design. The following survey should provide some information on what has and is being done in this country and the United States, where modern building methods are combined with modern welding technique and prefabrication of pipework for building-in the heating system as the building structure proceeds. Some of the accompanying illustrations disclose methods which could be applied with advantage in this country, but this does not suggest that the American way is the only one possible and it should be borne in mind that for medium-sized or smaller factories different installation methods, as applied in this country, might be more suitable. It should also be remembered that due to less severe specifications with regard to plastering and other factors, the overseas designer has an easier task than the heating engineer and the architect in Great Britain, where a two years' guarantee is usually requested against the appearance of cracks in plastering. It has been suggested that a relaxation of specification clauses would greatly stimulate the wider use for panel heating in buildings of any size and type, and the same applies, of course, to large radiant heating installations in factory buildings.

Radiant Heating Systems.

The architect, heating engineer, or builder has a choice of at least four individual structural methods by which radiant heating pipe coils can readily be installed in a structure, or he can use a flexible combination throughout a structure of one or all four methods.

Method 1.—For the average sized structure having two storeys, it is usual to install the pipe coils in the ceilings in the main and upper storeys. Heating panels are also used for smaller spaces installed overhead, and heated by hot water, steam, gas or electricity.

Method 2.—It is sometimes advantageous to install the pipe coils in the walls. This method may be employed for the complete radiation of a room if necessary, but it is usually applied where an additional source of heat is considered necessary in a section of a heated space.

Method 3.—If the pipe coils are to be installed in the floor area of the upper storeys, it is recommended that a completely modern type of construction be used, making use of steel joists with the pipe coils embedded in a concrete slab.

Method 4.—Radiant heating in the floor is the only satisfactory method of heating basementless structures, whether they are designed for industrial use or to meet the growing demand for simplified dwelling designs. In these types of structure the coils are simply laid on the gravel or crushed-stone base and the concrete slab is poured over them. Obviously, this method is the given design for large factory buildings.

Radiant Heating Panels.

The method for providing radiant heat to smaller factories by using a system comprising radiant heating panels, *i.e.*, completely prefabricated radiant surfaces, which are either fixed vertically to building stanchions, or vertically between the stanchions is more widely applied in this country. Overhead units are used, and are preferred where radiation from vertical wall units would be disturbed by plant equipment, or by material being moved about or stored on the floor. In some workshops, radiant panels have been mounted on the walls to support plenum heating. It is interesting to note that gas-heated radiant units are frequently used for medium-sized workshops, although hot water or steam still seem to be preferred for larger areas. The mean temperature of hot water circulated through these radiant warm water panels is about 90 deg. F., with, say, 95 deg. F. flow temperature and 85 deg. F. return. The surface temperature of gas-heated radiant panels overhead is usually higher. In small workshops occasionally electrically-heated overhead radiant panels are in use, but their running cost is higher than the usual hot water panels. Overhead radiant panels in a factory building work exactly as any other radiant source of heat, namely, by emanating heat rays, which penetrate the air in the workshop and produce heat once they strike a solid surface. It is claimed by the suppliers of these radiant panels, and has been confirmed in practice, that natural comfort conditions are better obtainable with radiant heating than with any other method of space heating because the air delivered into the workshop for ventilation need not be heated up to temperatures over room temperature, but can be rather cooler, thus providing a freshening and stimulating effect. It is also claimed, although this cannot always be ascertained, that by keeping room temperature lower with the use of radiant panels, the running cost of the installation is lower due to the smaller difference between internal and external temperatures. Heat losses from buildings are closely related to internal and external temperatures, and by lowering this differential, heat losses must become smaller, and thereby the heat load and fuel consumption reduced. It depends very much on local conditions whether this reduced heat demand will work out in such a way as to substantiate the sometimes exaggerated claims for economy of panel heating in factories. Radiant heating in private houses and in private and

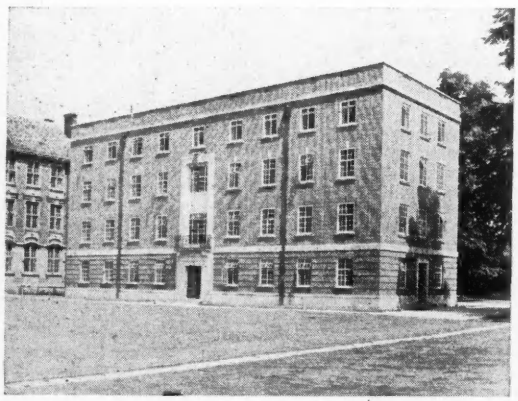


Fig. 1.—The School of Agriculture, Cambridge—panel-warmed with heating coils.

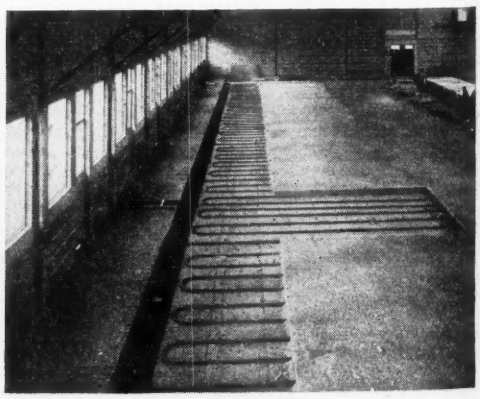


Fig. 3.—Floor of industrial drawing office under construction with radiant heating coils in floor.

public buildings is rather a different matter, and it has been established without any doubt that panel heating methods do produce substantial savings in running costs.

Coil Design.

Pipe elements for radiant heating systems have, in the past, taken several different forms, but present practice has rather definitely crystallised around two basic patterns: the continuous coil (Fig. 2(a)) and the grid (Fig. 2(b)), or combination of them (Fig. 2(c)). The characteristics of each type are different and the choice between the two coil systems merits some study.

As a general rule the continuous coil is a little less expensive to fabricate and a little easier to design, particularly where an irregular plan is involved. Such a unit makes full use of random pipe lengths and waste is therefore kept to a minimum, as is the welding necessary to salvage short lengths. The over-all welding required is also usually less than with the grid, where more pieces of pipe have to be joined. However, the technique of bending is introduced—at least to a greater degree—for fabrication of radiant coils, and this tends to counteract the welding economy to a certain extent by comparison with the grid.

The limiting factor in the otherwise desirable use of the continuous coil is due to rapid rise in total frictional resistance with increases in the total length of the coil. Pump sizes, and therefore initial cost, as well as current costs during operation, place a rather definite economic limit to the head against which the circulator must work.

The grid, on the other hand, can be made to serve even very large areas and still provide excellent thermal distribution with light hydraulic load. Grid headers, or manifolds, are usually made of larger pipe sizes in order to facilitate welding in the smaller pipe running the length of the grid. For example, a 2-inch header may be chosen to supply 1-inch or 1¼-inch " run " pipes.

In the design of a radiant system, the choice between these two forms is not usually difficult. Since the heat losses, and therefore the quantity of water required, have already been calculated for each area, a rough index to circulator size is immediately available. Main lengths and sizes have also been determined and this information further narrows down the field of possible practical circulator sizes. The difference between the maximum frictional resistance against which these one or two sizes will pump the required quantity of water and the friction head already accounted for in mains, boiler, and fittings gives a specific answer as to whether an element for a given area should be a grid or a coil. In large installations, such as in factories, where it is necessary to keep the frictional resistance to a minimum the grid arrangement is recommended.

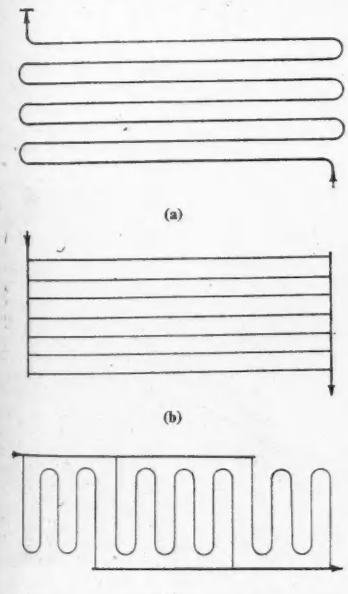


Fig. 2.—Types of radiant heating pipes.

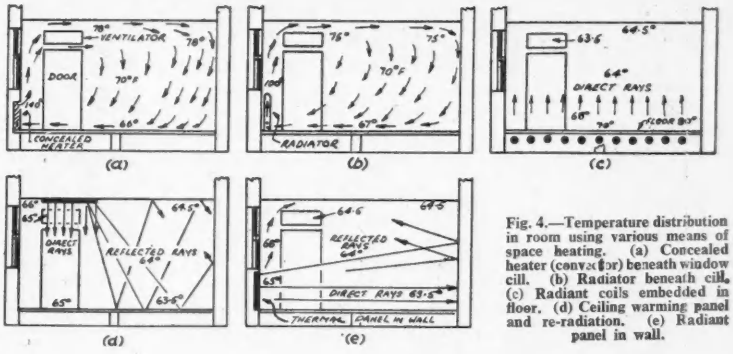


Fig. 4.—Temperature distribution in room using various means of space heating. (a) Concealed heater (convector) beneath window cill. (b) Radiator beneath cill. (c) Radiant coils embedded in floor. (d) Ceiling warming panel and re-radiation. (e) Radiant panel in wall.

A number of ingenious compromises between these two basic forms may be worked out in order to retain the advantages of both. For example, coil lengths are run up to the maximum and common supply and return headers then connect to the main, just as in elementary grid system. Fabricating costs are thus kept to a minimum, yet good hydraulic characteristics are developed.

As a matter of design, it should be noted that it is occasionally found desirable to effect a slight concentration of piping within a single element, to meet unusually high heating requirements. For example, if a given room contains a large area of glass along one side, a slight concentration of pipe at that side may be in order. This should not be excessive—two or three adjacent pipe runs set on closer-than-usual centres—because unduly warm spots in the panel surface tend to work against the evenness of radiant heating, which is one of its principal advantages.

Coil Position in Floors, Ceilings, Walls.

When floors are of concrete, almost invariably the radiant heating coils are placed in the floors. This applies to ground slab or joist slab construction. Since the temperature of the water in the pipes is low (110 deg.-140 deg. F.) the temperature of the floors does not exceed or often approach 80 deg. F., which is the radiating temperature of the body. Therefore the floor is never uncomfortably hot to the feet.

Many people consider concrete to be a cold material for flooring purposes. Radiant heating can overcome this misconception, for two reasons; first, the floor itself is heated to a comfortable temperature; second, the almost total absence of convection currents precludes cold draughts on feet and ankles. However, for those who still dislike concrete floors use can be made of parquet floors of wood, asphalt, tile or linoleum cemented to the concrete. All of these methods have been found satisfactory and comfortable for factory buildings.

Fig. 3 illustrates a heating system with pipe coils in the floor of a factory building.

Features of Radiant Heating Systems.

Although the established standard system is to heat the floor, it is sometimes necessary to apply heating coils to walls, or to use high temperature radiant heating panels in the form of overhead panels, where heat rays are directed downwards. These details are, however, the responsibility of the designer of the heating system as such, and it may perhaps be said that they affect the architect less than other features of a modern radiant heating system. For example, the use of overhead heating coils or panels reduces heat losses from the roof structure, thus enabling the architect to save in building cost. Another factor of radiant heating is the absence of draught, which is beneficial for layout of the building. In the same way the evenness of heat distribution gives wider scope in regard to structural layout, so far as the workers' comfort is concerned. Practice and research have shown that a greater degree of comfort is obtainable if radiation combines with warmed air for ventilation purposes. It is, therefore, sometimes advisable to provide radiant surfaces in the walls of a room, so that the walls of a workshop are warmer than the air. The use of radiators or pipes near the walls and a supplement by heated air from air ducts, or unit heaters, advance the feeling of comfort, but panel heating offers an even more convenient solution which in some respects can rival air conditioning. A number of relatively small radiant panels were installed in factories during the war years; some are heated by steam or hot water, others by gas or electricity, and they work satisfactorily. We will, however, examine in more detail the application of radiant heating, using the usual large embedded pipe coils.

The Principle of Radiant Heat.

Before going into practical technicalities of radiant heating, a brief summary of the effect of heat rays may be permissible.

When heat rays emanating from a hot surface strike a cooler surface a portion of the heat is absorbed. The balance is reflected without much change in wavelength, similar to reflection of light from a mirror. The absorbed rays heat the struck surface, but the reflected rays strike other surfaces in their path, which they heat up again. This explains why, for example, radiant wall panels in a room heat floor and ceiling by reflection.

In general, dark- and rough-surfaced bodies absorb heat rays more readily

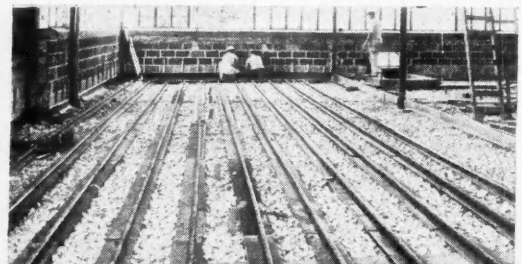


Fig. 5.—Floor pipes with insulating strips beneath in course of laying in a U.S.A. factory building.

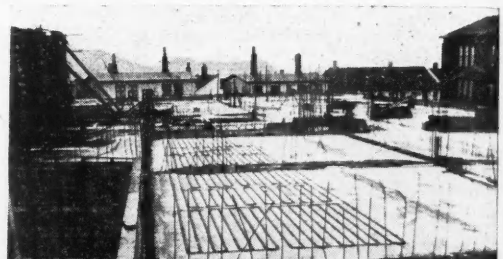


Fig. 6.—Radiant heating floor coils during installation at a new technical college, Reykjavik, Iceland.

than light and polished surfaces. It is important to note that the human body can lose heat by radiation to any surface at lower temperature and can gain heat from any warmer radiant surface. This latter occurs regardless of air temperature in the room, and the heat rays penetrate the air without raising air temperature at all. In a room where the walls have 75 deg. F., air temperature would have to be as low as approximately 44 deg. F. in order to equalise the effect of radiation. On the other hand, an air temperature of 75 deg. F. would require a wall temperature of about 50 deg. F. in order to compensate for radiation heat. This condition, however, would be uncomfortable, because the room air would feel stuffy. Air temperature and radiant heat in a room have, therefore, to be balanced to give real comfort.

Temperature Distribution.

It may be of interest to compare air current and heat distribution of various heating systems, as shown diagrammatically in Fig. 4. Fig. 4(a) shows a concealed convector and warm air currents, 4(b) shows heat distribution from a steam-heated radiator, 4(c) illustrates a heated floor, 4(d) shows the effect of reflected heat rays from a radiant panel on the ceiling, and 4(e) the effect of a wall panel. It will be appreciated that temperature distribution of radiant heating can be very uniform and efficient. Absence of "cold spots" and of draughty air currents are certainly one of the main advantages of panel heating.

Certain standards have been evolved in the structure of heating coils. The usual material is wrought iron, which must be anti-corrosive, due to inaccessibility once installed: In exceptional instances copper can be used, but this is more expensive.

Fig. 5 shows a floor-type radiant system in a factory extension, in a single-storey factory building used for light engineering, being typical for American practice. Three grid systems were used to cover the entire shop area, and were partially shop-fabricated. A 1-inch layer of semi-insulating material was used to restrict heat flow to the basementless ground. The pipes were then laid, welded together as shown, and a 6-inch thick concrete slab was then poured over the grid system. Before this, a two-hour hydraulic test of 200 p.s.i. revealed faultless construction and welding of the piping system.

The three radiant grids are pitched slightly towards the boilerhouse, and each grid is vented at the highest point, to extricate air from the hot water. Flow water temperature is manually operated by mixing flow and return water by hand.

Fig. 6 shows radiant floor coils during installation, before concrete is poured over the floor.

Fig. 7 shows floor coils in an office building, where accelerated hot water is the heating medium. Room temperature control can be performed by mixing flow-water with return water automatically, according to outside temperature. Clean tempered air is supplied from air ducts.

From the examples shown, it is obvious that floor coils are generally accepted as standard. The reasons are that they are the cheapest and easiest to instal, and are more efficient in that they can be located closer to occupants. Floor coils have also a greater effect at lower temperature as they keep feet and legs warm. Ceiling coils, however, can be operated at higher temperatures without causing discomfort, and this point might occasionally favour ceiling coils, which also are free from the insulating effect of floor coverings. The use of overhead panels or of ceiling coils becomes obvious where floor coils would not supply sufficient heat required for comfort in very cold climates, the limiting factor for floor coils being temperature.

It should be noted that pipe coils surrounded by loose fill give up heat by conduction and by radiation and convection. Buried coils in solid concrete, however, transfer heat only by conduction. The term "radiant" is thus somewhat misleading. Another point of interest is the nearly identical value of coefficients of expansion of wrought iron coils and concrete or plaster. This avoids stresses in the pipes and cracking of masonry, and would be favourable for less rigid plastering specifications in this country.

For factory heating, the coils are heated

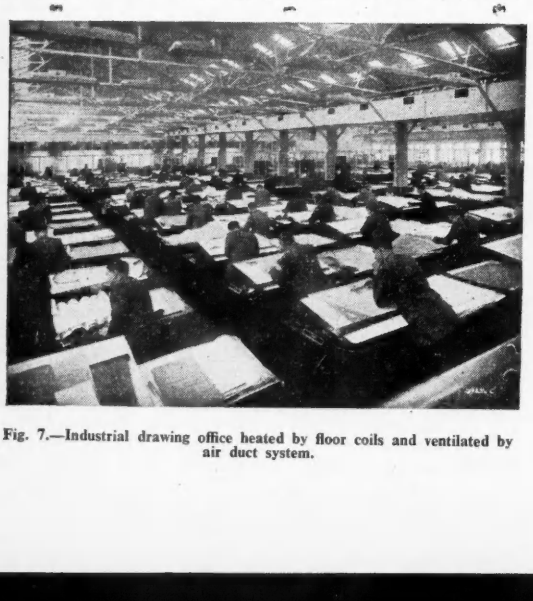


Fig. 7.—Industrial drawing office heated by floor coils and ventilated by air duct system.

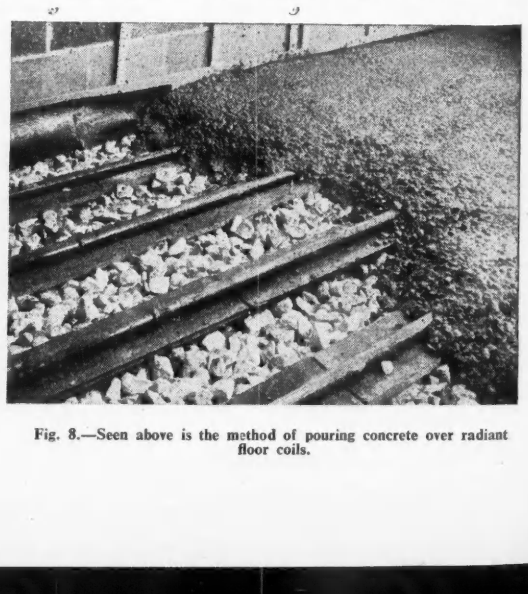


Fig. 8.—Seen above is the method of pouring concrete over radiant floor coils.

by steam or by accelerated hot water, and the grid pipes are located in concrete slab, with a thin cover of concrete floor for reducing resistance to radiation. An interesting radiant heating grid system in a factory building is illustrated in Fig. 8. Eight-foot lengths of 1¼-in. wrought iron pipe are welded into 2-in. headers, and these prefabricated units welded on site. A 1-in. thick semi-rigid insulating material was placed beneath each pipe to insulate it against undesired downward heat flow. A 6-in. concrete slab was then poured over the pipes and over the crushed rock fill, as shown. Sometimes broken stone fill is first laid on the ground, then the pipes located and additional stone placed around the coils before concrete slab is poured.

The means by which expansion joints in concrete are taken into consideration is illustrated in Fig. 9 (a) and (b), showing section and plan view respectively of a loop in the pipe coil, which easily

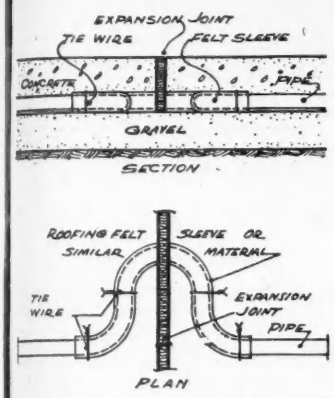


Fig. 9.—Loop in supply pipe for expansion applied to joint in floor concrete.

follows movements of the two concrete sections. It is, of course, often possible to design the pipe coils so that each heating element keeps within its own concrete section formed by the concrete expansion joints. The most direct way is, however, to locate the grit below the slab where the pipes can move freely.

Effect of Heat on Plaster and Concrete.

This question, of paramount interest to the architect and heating contractor, is satisfactorily answered by post-war experience on larger factory buildings in the U.S.A. and in this country. Reinforced concrete chimneys are sometimes exposed to flue gas temperatures up to 600 deg. F. and have withstood such high temperatures very well.

Good quality concrete and the sparing use of water in a plastic concrete will produce the desired hydration of cement in the concrete. The only precaution recommended by experts seems to be to ensure proper curing of the newly laid concrete floor by covering the floor surface temporarily with some impervious covering to prevent water from escaping during the heating-on period. The danger of getting an improperly cured cement due to presence of grit coils carrying hot water from 110 deg. to 150 deg. F. is then minimised. The use of a reinforcing scrim of jute bagging cloth, having about eight threads to the inch, is recommended by Continental builders, and is worked into the plaster finishing coats. Reinforcement with wire mesh is usual

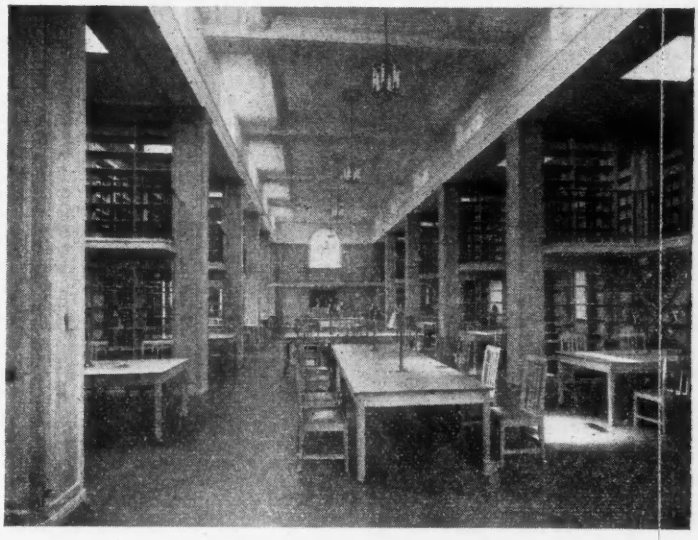


Fig. 10.—A panel-warmed lecture room, Cambridge.

for plaster on ceiling coils, and is widely used in radiant heating installations. (Fig. 10.)

The question of floor covering is, of course, more important for radiant heating systems than for any other method of heating. The floor covering to be used must be decided by the architect before the heating system is being designed in order that correct allowances may be made regarding heat transfer. Floor coverings used in U.S.A. range from wood to asphalt tiles on concrete slabs. Other materials applied are rubber tile, ceramic tile, linoleum and terrazzo, depending on the type and purpose of the building; generally speaking, any usual factory floor covering is suitable for factory buildings using floor coils.

The use of wire mesh for reinforcement above the pipes in concrete slab is recommended where thickness of the latter is at a minimum. Stresses will thus be distributed and heat more uniformly dissipated through the slabs. It is generally considered sound to allow a concrete cover above the pipe coils equal to the outside diameter of the pipe, but not below 2 in., unless a finish floor covering is used.

General Heating Data.

The choice of main diameter for a factory radiant heating system having a temperature drop of 20 deg. F. through the system is easily determined from the formula

$$\text{G.p.m.} = \frac{\text{Total Btu/hour}}{500 \times 20}$$

where g.p.m. is the number of gallons of heat flow per minute to be circulated. By allowing a friction loss in the pipes, their diameter can then be calculated, or simply found from standard tables for frictional flow.

A point to be considered by the architect is the maximum design water temperature. Usual flow temperatures in concrete slabs for bare or lightly covered factory floors (asphalt, tile, etc.) are 140 deg. F. Flow-water temperature in ceiling pipes, or in wall or ceiling panels, can be higher, of course, which allows piping of smaller diameter with increased flow velocity.

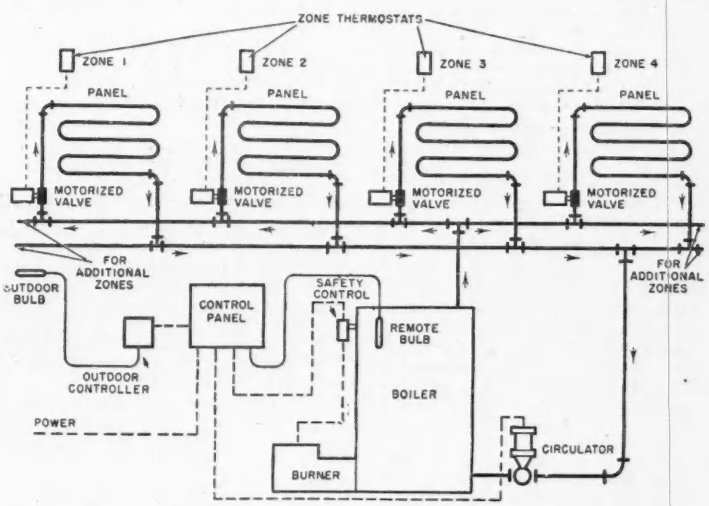


Fig. 11.—Automatic control of warming panels and coils, using electrical automatic temperature regulators.

Automatic Control.

The effectiveness of automatic control of any heating system depends on the time lag of the system. Radiant coils may be effectively controlled from outside temperature by varying the flow water temperature. Time lags encountered fall into two groups: (a) Thermal inertia of the heating coils, including contents of hot water, and (b) thermal inertia of the structure of the building. Heat is stored in the flow water and in the metal of the coils. It is also stored in the concrete slab and in the filling stone surrounding the pipe coils. Heat is stored in the whole mass of the heated building, in metal of machines, etc. Thermal inertia is the resistance of stored heat to be changed by variation of heat input, and causes a delay in control action. If a factory workroom becomes overheated, the only way to restore the desired temperature is to reduce heat inflow, or even to cut it off, until the surplus heat has been dissipated, and escapes to the outer atmosphere, which takes time. In spite of considerable thermal inertia, the use of an outdoor thermostat anticipates changes of heat demand from the boiler to such an extent that thermal inertia is partly balanced by shortening the time lag.

Various non-electric and electric systems of indoor-outside control of flow water temperature are available. A non-electric control system uses a thermostatic three-way blending valve, which is so installed that it either partly or fully by-passes the return water from the radiant coils from the boiler or heating calorifier, if the temperature of the heated space rises unduly high. An outside thermostat bulb varies the set temperature of the blender according to the "weather," and does this well in advance before a sudden drop or rise in outdoor temperature can be felt inside the building.

Fig. 11 illustrates multiple zone control of a forced water radiant heating system. The outdoor controller responds to change of outdoor temperature by transmitting a signal (impulse) to a control panel, and this alters heat input from the oil burner or stoker. The building is heated and controlled in zones, and each heating zone has a zone thermostat and motorised valve. Temperature of the radiant coils is thus regulated according to the requirements of each zone.

This concludes this survey. It seems that radiant heating systems can, with advantage, be more widely used for the heating of factory or other large buildings, either as the only source of heating, or in combination with plenum ventilating systems, or with air conditioning systems.

ACKNOWLEDGMENTS.

Figs. 1, 6 and 10, Richard Crittall and Co., Ltd.
Figs. 3 and 7, Brightside Foundry and Engineering Co., Ltd.
Fig. 4, Courtesy, T. Napier Adlam.
Figs. 5 and 8, A. M. Byers Co., Pittsburg, Pa., U.S.A.
Fig. 11, Honeywell-Brown, Ltd.

M.O.W. Advisory Leaflet.

"Limes for Mortar," No. 6 in the series of advisory leaflets of the Ministry of Works, has now been issued. These advisory leaflets are written to meet the needs of small builders, clerks of works, foremen, craftsmen and building students. "Limes for Mortar" includes a handy tabulated reference showing maturing times, method of slaking and mixing, and other practical details dependent on the properties of the four types of lime. It can be obtained from H.M. Stationery Office, price 2d.

INQUIRY BUREAU

Mortar Mix for Retaining Wall

Q.—A 25-ft. long by 10-ft. high wall is going to be built to support a roof with a 17-ft. span, and also to act as an earth-retaining wall to a height of 7 ft. It has been decided to build the wall two red bricks thick with a 3-in. rendering of cement between, using iron wall ties throughout. The purpose of the cement is to prevent water penetration through the wall. There are two proposals:—(1) To use a mixture of 3 washed sand to 1 of cement, not only for the 3-in. cement rendering but also for the brick facing mortar; (2) to use a mix for both jobs of 1 of cement, 2 of lime and 8 of washed sand. Which do you consider to be the better method?

CONQUEST.

A.—For the purpose of resisting earth pressure and possible water penetration, I do not favour the idea of two red bricks with a 3-in. rendering in the centre, and tying with irons. The carrying capacity of the wall is neutralised by the internal rendering, and the wall ties would, in my opinion, make it difficult to keep the wall watertight and would therefore not be of much use for earth or soil resistance. I suggest a 13½-in. wall built on a concrete foundation, the back of the wall facing the soil to be covered with ¼-in. asphalt in two coats carried under the brick wall and over the sub-concrete floor, where it should be covered with a 3-in. loading coat of concrete. A splayed fillet should be formed with the asphalt where the wall joins the floor at the base, and at 8 ft. high up the wall, and at least a foot above the surface of the soil. The brick wall should be splayed along its entire length and the asphalt covering bonded into the bed joint of the brickwork.

Alternatively, I suggest a 13½-in. wall built in two sections, the first in 9-in. brickwork facing the soil, rendered on this face with 1½-in. waterproofed screed, which should be carried under the wall and up the front face with the same thickness screed on the same lines as the asphalt. Then erect 4½-in. brickwork in front of this waterproof face. The waterproof screeding should be continued over the sub-concrete. This is a sandwich wall and is not, in my opinion, so strong as the one described above.

With regard to the mortars, I suggest for the brickwork of either scheme 1 part of Portland cement to 4 parts of sand by volume. If a waterproofer is used, the mixture should be in accordance with the manufacturers' instructions.

G. W. H.

[The name of the waterproofing material recommended has been forwarded.—ED.]

The Damp-proofing of Brick Walls

Q.—We have a problem upon which we would be obliged for your help. It concerns a large factory building of steel construction in which the panels are filled in with 4½-in. common brick-work. We wish to decorate the interior with paint or distemper, but are at a loss to know what is a suitable preparation to cope with the dampness.—J. P.

A.—To deal with the dampness prior to internal decoration, I suggest, as the walls are only 4½ in. thick and in common brickwork, that either of the two following methods may be used. Rough hack the brickwork and rake out the joints, if possible; thoroughly saturate the walls with water, apply a cement grout of creamy consistency and incorporate a liquid waterproofer; or, if you have a first-class key, add a waterproofer to two and a half parts of washed sand and one part Portland cement and follow with a second coat of rendering as soon as possible. The first coat should be half an inch thick and well scratched for the finishing coat, which should also be not less than half an inch thick. The final coat can be coloured to represent the stone work if desired. Special attention should be given to the dampcourse and keep all parings or filling-up below the d.c.

Alternatively, if the walls are well pointed and no cracks visible, I advise two coats of colourless transparent waterproofing liquid. If the bricks are porous, give two undercoatings, well brushed in, and then apply a liberal third coat. All making-good prior to the application of the waterproofer should be done with cement mortar.

With reference to the internal treatment of the walls (presumably on pointed brickwork or plaster), remove all loose flaking or dusty matter, apply the first coat with a special binding solution. The second should be an undercoating and the third coat can have a flat or gloss finish. The application must be carried out in accordance with the manufacturers' instructions.

G. W. H.

[The names of the proprietary materials recommended have been forwarded.—ED.]

Flaking Distemper

Q.—I should be grateful if you would recommend an inexpensive treatment for walls from which the distemper keeps scaling and flaking. The buildings affected are married quarters built about 1938. It is believed that the walls were plastered with a patent plaster.

Having taken particular care to see that before the application of the distemper the walls were carefully washed down, I have tried both ordinary distemper mixed with size, applying one coat of size to walls and washable distemper, but to no avail, for within a few months the scaling and flaking appear again.

D. C. R. E.

A.—In the first place scaling and flaking may be due to certain acids forming in the plaster wall through dampness or humidity. Flaking sometimes occurs when the binder in the distemper is too strong and contraction takes place. It can also occur when the binder is too weak; this is often the case when a washable distemper is put over a glue-bound distemper.

The whole surface affected should be cleaned down to the bare plaster. An old method employed, after the removal of the distemper, was to give the surface a coat of sharp paint, i.e., a lead paint with a larger percentage of turpentine than linseed oil, but the practice today, after cleaning, is to use a neutraliser and finish with a washable distemper according to maker's instructions. Another method, after cleaning the walls, is to paint with a thin coat of flat paint to which is added three per cent. mica. This will grip the surface and provide a good key for distemper.

It is also necessary to see that the rooms are ventilated so that a free current of air reduces condensation and humidity to a minimum.

G. W. H.

[The names of proprietary materials recommended have been forwarded.—ED.].

MECHANICAL HANDLING EXHIBITION

By a Correspondent

IN all branches of industry the employment of machines in place of hand labour has progressively developed, and today there are some industries where mechanical handling amounts to 90 per cent. of the total. The scope and possibilities of the machine are becoming ever more widely recognised and now embrace a multitude of operations which used to be done entirely by hand. These may be of the small-scale repetitive order, as seen in many package factories, or they may be on a large scale involving heavy loads. It is the latter especially which are represented by the Mechanical Handling Exhibition at Olympia, which was opened by Sir John Anderson on Tuesday last. It is the second of its kind, organised by *Mechanical Handling*, the only British journal devoted exclusively to this subject.

The exhibition is a striking display filling not only the Grand Hall but also the Annexe and the National Hall. Here can be seen a comprehensive collection of cranes, conveyors, stackers, hoists, pulley blocks, power trucks, and other similar mechanical appliances. Some are shown in action, others by working models and cinema films, among the models being one by Priestman Brothers, Ltd. (Stand B11) of a grab automatically grabbing and discharging along an overhead gantry, another by British Ropeway Engineering Co., Ltd. (Stand B33) of a ropeway conveyor showing material being loaded from hoppers and tipped at selected points.

Cranes.

On entering the Grand Hall the eye is first attracted by the jibs of many cranes, longest of all being a Coles crane with its tubular arm reaching up to the top of the great roof of Olympia. It is the new 20-ton mobile crane exhibited by Steels Engineering Products, Ltd. (Stand A7). Like other Coles cranes, it is a self-propelled, fully mobile crane mounted on pneumatic tyres, with a superstructure capable of slewing 360 degrees either way. Cranes of this type are particularly suitable for contractors doing construction work on open sites where there is considerable variation in loads, height of lift and radius of operation.

Jones cranes of several types are shown by George Cohen, Sons and Co., Ltd. (Stand A6). The KL 44 is diesel-operated, can be fitted with channel or lattice jibs, and may be mounted on a pneumatic-tyred chassis or on crawler tracks. Also to be seen on the stand is the "Moonraker" Mark II builders' platform hoist. Its mast can be extended to various heights by built-up sections. The power unit is a "Saga" petrol winch, normally braced to the base of the mast by means of scaffold tubing.

Some noteworthy mobile cranes are shown by R. H. Neal and Co., Ltd. (Stand A12), ranging from the ½-ton "Runabout" to the new GM 15-cwt. fully mobile crane with hydraulic controls and a telescopic mast extending from 15 ft. to 40 ft.

Cranes and derricks, of one kind and another, are a very considerable item in the equipment for the construction of buildings and the carrying out of engineering work: and it was very appropriate, therefore, that, among the papers arranged to be read at the convention in connection with the exhibition, there should have been one on "The Usefulness to Contractors of Mobile, Rail-Type Jib Cranes and Derricks," by Mr. Brian Neal, M.I.Mech.E. Each type has its merits and limitations, but after reviewing all three in detail, Mr. Neal's summary is that when wide range and freedom of action are required, the mobile types are to be preferred—especially when diesel driven; for frequent travelling in a fixed direction or on exceptionally bad ground, the rail crane is the answer; and for high lifting capacities at large working radius, the derrick crane has the advantage.

Cost in Relation to Use.

In all cases there is no question of the capabilities of machines to replace hand labour, but, since everything ultimately turns on costs, organisation must go hand in hand with equipment. Thus, a crane or a mechanical shovel or a trench excavator must be put to continuous use to be profitable: it must not be allowed to remain idle on the site, otherwise its hire charge or overhead debit will nullify its merits.

Trenchers and Shovels.

Large undertakings demand large appliances, but with them the problem is less difficult to solve than with machines for more moderate needs. Trench excavators and shovels are a case in point. Hence the interest in several models to be seen at the present exhibition. There is, for example, the Barber-Greene Olding "Junior" Lightweight Ditcher, shown by Jack Olding and Co., Ltd. (Stand A5). This is the outcome of considerable trial and experiment (including tests at the Ministry of Works' Field Test Unit at Barnet), and should prove to be a valuable tool. It has been designed to cut trenches for footings on housing estates and for domestic services and drainage. It is crawler-mounted and driven by a Ford 10-h.p. unit. The machine has a vertical boom equipped with a series of buckets, and is fitted with an automatic overload release to prevent damage when the buckets encounter hidden obstructions. Two sizes of boom are available, interchangeable, giving maximum depths of 3 ft. and 4 ft. With the 3-ft. boom the machine will cut trenches 1 ft. 6 in., 1 ft. 8 in., and 1 ft. 10 in. in width; with the 4-ft. boom 8 in., 10 in., and 12 in. The rate of travel is from 10 ft. to 20 ft. per minute, digging speeds 6 in. or 12 in. per minute.

Another useful machine for the builder is the "Chaseside," shown by the Chaseside Engineering Co., Ltd. (Stand A4a). Starting life as a mechanical shovel, mounted on a pneumatic-tyred chassis and driven by a diesel or petrol engine, it has attachments for various other uses. Thus, it can be used as an angledozer, a bulldozer, and a brickstacker. For the last-named use, there is an attachment holding 100 bricks in a stillage; and in one hour 1,500 bricks can be placed on the site or on scaffolding by three men—one at the brick stack, one on the scaffolding, and one on the "Chaseside" machine.

The "Wild" builders' elevator, shown by Brown and Aitken, Ltd. (Stand G14), is another most useful appliance. It will handle 2,000 bricks an hour.

Chain Hoists and Trucks.

The gin wheel must have been the earliest attempt to lift and lower materials on a building. It still survives, but how feeble is its operation in comparison with the hand-worked or electrically-operated chain hoists that have been developed. They are to be seen on many stands at the exhibition, among them being the "Felco," "Vaughan," "Mytemin" and "Aabacas."

Power-operated trucks of various kinds are a prominent feature of the display. There are, especially, fork-lift trucks which save an immense amount of time and labour in transporting and stacking packages in factories and stores. Another piece of equipment of similar kind is the power-operated barrow, well exemplified by "The Mechanical Moke," exhibited by Winget, Ltd. (Stand A26). This has a three-wheel chassis with a small petrol engine mounted over the twin driving wheels. It is fitted with a tipping skip of 9 cu. ft. capacity, interchangeable with a steel platform 5 ft. by 3 ft. 8 in.

Among various kinds of trucks shown by the Yale and Towne Manufacturing Co. (Stand B8) are some entirely new models, including the "Lift-Easy," and a pallet truck, both with ratchet lift and a hydraulic lowering check (operated simply by a foot lever) which takes the platform completely down to the floor.

Conveyors, fixed and portable, are another prominent feature of the exhibition, noteworthy among them being the overhead range shown by Geo. W. King, Ltd. (Stand A19), the portable conveyors by Crone and Taylor (Stand A31), and the "Motaveyor" conveyors by J. Collis and Sons, Ltd. (Stand F4).

Included in the exhibition are also some things, not mechanical, which are of especial interest to builders. Among these I noted, on the Stand (B40) of W. C. Youngman, Ltd., some fine "Challenger" ladders and a lightweight staging 18 ft. long., to take the place of scaffold boards; a range of aluminium ladders by Lyte Ladders, Ltd. (Stand C13); some very useful hand-operated trucks by H. C. Slingsby, Ltd. (Stand C6); and a display of wall plugs, bolts, etc., by the Rawlplug Co., Ltd. (D3b).

The exhibition is open until June 17 from 10 a.m. to 6.30 p.m The entrance fee is 2s. 6d., but to encourage visits from operators or potential operators of equipment, the organisers have arranged that admission will be free on production of a trade union membership card.

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LAW REPORT

Arbitration Upheld

KING'S BENCH DIVISION
BEFORE MR. JUSTICE DEVLIN.

Finsbury Borough Council v. East-End Dwellings Co., Ltd.

In the King's Bench Division of the High Court recently Mr. Justice Devlin had before him a motion by the Finsbury Borough Council, to set aside the award of an arbitrator awarding the East-End Dwellings Co., Ltd., £32,000 compensation in respect of the compulsory purchase by the Finsbury Borough Council, of land owned by the company.

The motion was dismissed with costs.

The land in question had been the site of working class dwellings which, on June 24, 1944, were completely demolished as the result of enemy action. Before this, the houses were let at weekly rents controlled under the Rent Restriction Acts. The houses had not been rebuilt and the corporation bought the land by compulsory purchase, which was confirmed by the Minister of Health.

In May, 1949, the War Damage Commission decided that they would make a payment of cost of works in respect of the damage; the matter went to arbitration and the arbitrator assessed the compensation payable in respect of the land at £32,000, on the assumption that the whole of the war damage had been made good before the date of notice to treat. It was under these circumstances that the motion was dismissed.

Mr. Justice Devlin, in giving judgment, said the principle to be applied was laid down in the case of *Ellis and Sons Amalgamated Properties Ltd.* v. *V. Sisman*. Had the houses been rebuilt they would have been different buildings from the ones destroyed and no one of the statutory tenants would have the right to say that his statutory tenancy continued. The arbitrator had to determine whether certain sections of the Town and Country Planning Act applied, and in this his lordship came to the conclusion that the arbitrator proceeded on the right assumption and made no error of law.

PAYMENTS FROM W.D. COMMISSION

Builder Fined

GEORGE EDWARD WAY, a builder, of 17, Perry-rise, Catford, was ordered to pay a total of £562 10s. by way of fines and costs at Clerkenwell, on May 31, on three summonses for furnishing false information for the purpose of obtaining payments from the War Damage Commission.

Counsel appearing for the prosecution said Way bought six houses in St. Norberts-road, Brockley, and the summonses concerned five of them. War damage repairs are needed to all of them. Claims were made against the Commission, said counsel, and payments had been made. Giving a summary of the claims and payments, counsel said that, in all, Way had claimed £963, was paid £811, and the proper cost of repairs done was £253. There was thus a total overpayment to him of £558. So far as the summonses were concerned, the position was that claims were £573, payments £421 and the proper cost was £89. This was an overpayment of £332.

It had been discovered, said counsel, that in one case, where £103 16s. was paid, no work had been done to the property at all.

Mr. Victor Durand, counsel for Way, who pleaded guilty, said the whole tragedy arose out of a motor-cycle accident which Way had, and which induced him to take his brother into partnership. The brother had disappeared. There was no previous complaint against the defendant, whose offence was that he never took any steps to check the accuracy of his brother's figures. "This builder in a small way of business has had at least 17 other properties subject to war damage claims," said Mr. Durand, "and there is no criticism at all of the conduct of his affairs."

The defendant, said counsel, was anxious to repay this sum, but in view of the present proceedings the Commission had not, of course, accepted any payments.

The magistrate, Mr. Frank Powell, said he thought he had better deal with the figure of £558 "and clear everything up." The defendant had profited to the tune of £558 and the maximum sentence on each of the three summonses was £100 and/or three months' imprisonment. In view of the special circumstances to which his attention had been called by both counsel, he felt justified in not sending the defendant to prison if there was some way in which he could ensure that the public was not deprived of any of the money which the defendant had obtained.

The magistrate said there would be a fine of £100 on each of the three summonses, with costs totalling 250 guineas.

HOUSING PROGRESS

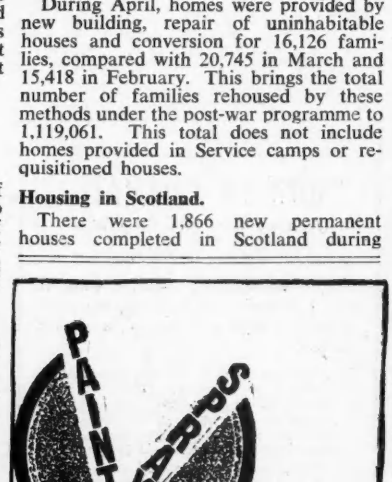
Figures for April

THE HOUSING PROGRESS SUMMARY presented to Parliament on June 1, jointly by the Minister of Health and the Secretary of State for Scotland, shows that the number of permanent houses completed in Great Britain during April was 14,862 compared with 19,385 in March and 14,069 in February. The total number of houses completed under the post-war programme is now 843,165 (686,019 permanent and 157,146 temporary).

During April, homes were provided by new building, repair of uninhabitable houses and conversion for 16,126 families, compared with 20,745 in March and 15,418 in February. This brings the total number of families rehoused by these methods under the post-war programme to 1,119,061. This total does not include homes provided in Service camps or requisitioned houses.

Housing in Scotland.

There were 1,866 new permanent houses completed in Scotland during April. This brings the total of new permanent houses provided under the post-war housing programme to 73,160. Including temporary houses and other accommodation made available by conversion of existing premises, altogether 118,435 new homes have now been provided in Scotland since 1945. April's total of 1,866 new permanent houses includes 1,814 built under local authorities and the Scottish Special Housing Association, 40 under private enterprise and 12 under Government Departments.



BUILDING MATERIALS

The Needs of the Home Market

THAT the report of the Working Party, the findings of the Team which recently visited America and the recent investigation into house-building costs, all confirm that the three main requirements for increased productivity and lowered costs in the building industry were more materials, fewer controls and a greatly increased use of bonusing schemes was a view expressed by MR. ROBERT O. LLOYD, O.B.E., President of the N.F.B.T.E., speaking at the half-yearly meeting of the Eastern Counties Federation, at Lowestoft, on June 6. Referring to the supply of cement and the question of timber, Mr. Lloyd continued: Building contractors have no control over the first two and are, therefore, looking to the new Minister of Works to persuade the Government that the home market must have the first call on supplies of cement, and that it would be in the national interest to spend more dollars on timber.

Given increased supplies of building materials, controls could be abandoned. Whilst shortages persist, efforts to pre-plan, to organise on the site and to work bonusing schemes will be largely frustrated. I sincerely hope that the imports from Germany and Belgium will soon solve the cement problem, and that the increasing production of bricks may be sufficient to meet demands, particularly if local authorities and other building-owners will specify those types of bricks which are readily available instead of those which are in short supply. As regards timber, unless the bold line of increasing imports is taken, unless bulk buying is stopped and the controls are raised, builders must continue to pay their staff to chase supplies even for priority jobs. They will also continue to get their supplies in lengths which involve re-cutting, which mean waste and additional expense, and will have to go on using timber of poor quality.

I agree with the Working Party that bonusing schemes are an imperative requirement for increased productivity. This is a problem for solution by the industry itself, and it will be solved. When I was in America last year I found that high wages gave first-class results. In this country high wages have not meant high output. In view of this and of the post-war policy of full employment, it is essential not only that bonusing in the building industry should continue, but that it should spread. At the moment, the National Federation is engaged jointly with the trade unions in a review of the two-year experimental working of bonus schemes. Pending that review the existing agreement provides for bonusing schemes to continue.

The late Mr. D. J. Langham.

The death occurred on May 27 of Mr. Daniel James Langham, director-secretary of the Lawford Asphalte Co., Ltd.

CODE OF PRACTICE

Asbestos-Cement Sheet Roof Coverings

The Council for Codes of Practice for Buildings has now issued for comment draft code 143.201, "Asbestos-Cement Sheet Roof Coverings," prepared by a committee convened by the Royal Institute of British Architects.

The code deals with the various types of corrugated asbestos-cement sheeting used as coverings for roofs, generally of a pitch of not less than 25 deg. The various types of asbestos underlay sheets are also dealt with.

To assist in determining the suitability of this kind of roofing, the code gives information on the characteristics of the material in regard to durability, weather resistance, thermal insulation, fire hazard and condensation. The code advises on design in general and makes recommendations on methods of fixing the sheets, the treatment of eaves and verges, top-edges, abutments and the provision of gutters, rain-water pipes, walkways and roof-boards.

Tables are included giving the dimensions of straight and covered sheets and underlay sheets, and the laps, weights and purlin spacings for standard sheets. Other tables give the sizes of gutters and rain-water pipes, and the coefficients of heat transmittance for various types of corrugated sheet coverings with and without underlays, ceilings and linings.

The section dealing with work on site suggests certain safety precautions, and gives information on the storage, cutting, laying and fixing of sheets. The code also includes sections on the inspection, testing and maintenance of coverings.

The code is in draft form and subject, before final publication, to amendment in the light of comments, which should be submitted before June 14 next. Copies of the draft code may be obtained from the British Standards Institution, 24-28, Victoria-street, London, S.W.1, price 3s. post free, proof reference CP(B) 936.

APPRENTICES' UNIVERSITY SCHOLARSHIPS

Six boys have gained scholarships for three years' study under a scheme sponsored by the Building Apprentice and Training Council. The scholarships, valued at approximately £200 a year, are tenable at Manchester, Cardiff, or Leeds Universities, or at a technical college. These awards for 1950 are: Building Apprenticeship and Training Council Scholarship—D. H. Standen, carpenter and joiner apprentice, of Rock Mount, Mill Park-avenue, Hornchurch, Essex; S. Wales Federation of Building Trades Employers' Award—A. N. Morgan, carpenter and joiner apprentice, of 7, Belle Vue-terrace, Treforest, Pontypridd; S.W. Federation of Building Trades Employers' Award—A. H. Williams, carpenter apprentice, of 13, Dunsford-place, Bath; N.F.B.T.O. Award—J. M. Reid, plumber apprentice, of 7, Montrose-road, Forfar, Angus; National Joint Council for the Building Industry (George H. Parker Memorial Scholarship) Award—P. McFarlane, bricklayer apprentice, of 31, Springfield-road, Whitton, Twickenham; and N.F.B.T.E. Award—D. J. Butler, builders' surveyor, of 621, Harrow-road, Kensal Green, London. Certificates of award will be presented to the six successful candidates by the Minister of Works at the annual meeting of the Building Apprenticeship and Training Council in London, early in July.

SOUTHERN COUNTIES EMPLOYERS

Half-Yearly Meeting

THE HALF-YEARLY MEETING of the Southern Counties Federation of Building Trades Employers was held at Windsor, on May 23 and 24, under the presidency of Mr. E. R. Bowyer, J.P. The retirement was announced of Mr. G. Mackness Pettit from the senior vice-presidency. He is to be succeeded by Mr. Horace H. Shears, M.I.O.B. Reference was also made to the resignation of Mr. C. B. Sprigings from the chairmanship of the Regional Joint Committee.

After the president had briefly reviewed some of the regional business of the year, Mr. R. O. Lloyd, O.B.E., F.I.O.B., the national president, opened a discussion on the Report of the Working Party and on the visit of the Building Team to America. On the second day the debate ranged over the subjects of labour, apprenticeship and education, licensing, materials and housing. The organisation and training of foremen received considerable attention.

The late Mr. Frank Woods.

Mr. Frank Woods, chairman of the standing joint committee for the standard method of measurement of building works, and a senior member of the N.F.B.T.E. and the L.M.B.A., died suddenly on June 1, aged 84. The funeral took place at Croydon Crematorium on Saturday, June 3. Those present included: Messrs. Norman Longley, R. R. Costain, C.B.E., L. A. Walden, H. A. Close, R. H. Francis and E. C. Harris.

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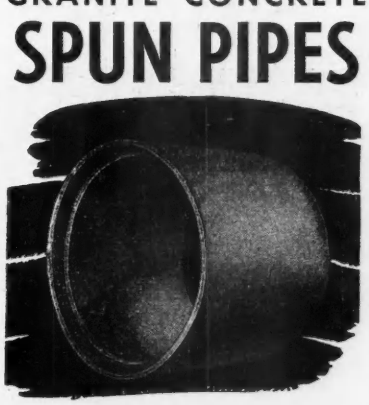

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OFFICIAL NOTIFICATIONS

Recording Steel Distribution

The Ministry of Supply announces that, under an Order signed by the Minister of Supply, arrangements have been made for collecting, with little inconvenience, statistics of deliveries of steel to the main consuming industries and for export.

This is necessary because of the ending of distribution control for general steel, announced by the Minister on May 22. Small purchases not exceeding £5 per month, and sheet steel, tinplate, ternplate and blackplate are excluded from the conditions of the Order.

The Order—the Iron and Steel Utilization (Records) Order, 1950 (S.I. 1950, No. 873)—came into operation on June 4, and copies are available from H.M. Stationery Office. In future, anyone requiring steel should merely include in his written order the words "Iron and Steel Utilization Record," followed by the code letters showing the purpose for which he is acquiring the steel. The code letters are listed in the pamphlet—"Note to Consumers, May, 1950"—which explains the system.

Paraffin Oil Freed.

The Ministry of Fuel and Power announces that it has been decided to bring to an end forthwith the Kerosene (Paraffin Oil) Priority Scheme, since supplies of paraffin are sufficient to ensure that the requirements of consumers who depend on paraffin for heating, lighting or cooking are met without priority permits. The Kerosene Control Card system is also terminated. Dealers and commercial consumers are, therefore, no longer required to hold control cards to obtain deliveries of paraffin from the supplier.

Purchase Tax on Folding Chairs.

After consultation with the Association of Folding Furniture Makers, the Commissioners of Customs and Excise have decided that, in future, the following articles shall be regarded as not chargeable with purchase tax under either group 11 or group 16 of the tax schedule. Fold-flat chairs (excluding stools) made entirely of wood except for essential fittings, such as hinges, and so designed that the folded depth of the chair at any point does not exceed 3 inches. Fold-flat chairs which incorporate upholstery, canvas, etc., and folding stools remain taxable under group 11 or group 16, as appropriate.

Plastic Sheeting.

The Commissioners of Customs and Excise, after consultation with trade associations concerned, have reviewed the liability to Purchase Tax under Group 7 of the Tax Schedule of certain plastic sheeting. As a result, the following note is substituted for that now appearing on page 19 of Notice No. 78: "In general, plastic sheeting, whether plain, printed or processed, is regarded as chargeable up to and including .015 of an inch in thickness. Within this range there are, however, certain sheetings which are clearly unsuitable for any of the purposes mentioned in the heading and which are not regarded as chargeable; examples are: (a) sheetings which are non-pliable; (b) sheetings backed with paper; (c) sheetings over .012 of an inch in thickness with 'leather effects,' e.g., those which by reason of having an embossed, glazed or similar finish have the appearance of patent or fancy leathers." Notice No. 78, at page 19, should be noted accordingly.

NEWS IN BRIEF

President Elected.

Dr. C. J. T. Cronshaw, D.Sc., F.R.I.C., has been elected president of the British Colour Council.

Presentation to New Mayor.

At the May board meeting of his company, the chairman, Mr. W. E. Rice, C.B.E., a former president of the L.M.B.A., who last month was elected Mayor of the City of Westminster, was presented by the directors with an onyx desk stand and, by the staff of the London office, with an inscribed leather desk blotter.

Birmingham Rotary Club.

Mr. Frank Russon, joint managing director of a Small Heath building firm and a past-president of the Birmingham Association of Building Trades Employers, has been elected president of the Birmingham Rotary Club. He is the author of a book on building trade incentives, which is to be published shortly.

Shortage of Bricks.

Lancashire, it is reported, is short of bricks and bricklayers. The large programme of school, factory and house building, coupled with the fact that a number of brickworks have closed down, is the cause of the brick shortage, while building expansion on the Cheshire side of the Mersey is said to have absorbed many bricklayers.

New Building Charges.

New national schedules of daytime charges for general building work, authorised by agreement between the Royal Institution of Chartered Surveyors and the National Federation of Building Trades Employers, have been issued in booklet form. They supersede the previous schedule authorised in 1933 and came into operation on June 1 last.

South Bank Visit.

Three hundred members of the London Master Builders' Association visited the Festival of Britain site on the South Bank, on May 20, at the invitation of the organisers. They were shown round by representatives of Messrs. Richard Costain, Ltd., and Holland & Hannen and Cubitts, Ltd., the chief contractors on the site, and spent two hours examining the building work in progress.

Lectures on Timber.

Mr. E. H. Brooke Boulton has commenced his lecture series on timber at the College of Engineering, Cambridge University. Among the titles of his lectures are the following: Softwood, hardwood and plywood supplies; Felling, conversion, sawmills; Utilisation of special timbers for engineering purposes; Seasoning and preservation; Advantages and disadvantages of laminated constructions.

Planning Ministry Circular.

The Ministry of Town and Country Planning has recently issued Statutory Instrument No. 792, 1950, Town and Country Planning England, The Town and Country Planning (Churches, Places of Religious Worship and Burial Grounds) Regulations, 1950. These regulations prescribe the conditions governing the use of land, consecrated or otherwise, acquired under the Town and Country Planning Acts or appropriated for the purposes thereof and occupied or formerly occupied as churches, places of religious worship or burial grounds. The regulations also include conditions relating to the removal and reinterment of human remains and the disposal of memorials and registers.

B.R.S. Digest.

The Building Research Station, Garston, Watford, Herts, have issued Digest No. 17, "Colourwashes (including Paints) on External Walls."

Year Book.

The North-western region of the Federation of Master Builders have recently issued their year book for 1950, which contains a list of members, the national working rules and variations, holidays with pay schemes, a list of recognised holidays, and details of the national apprenticeship scheme, etc.

Ballast and Sand Wages.

At a meeting of the National Joint Council for the Ballast and Sand Industry, held on May 10, a number of decisions regarding increases in wage rates, existing higher rate, annual holiday, and Bank holidays were made. Details of the decisions can be obtained on application to the Employers' Secretary, National Joint Council for the Ballast and Sand Industry, 48, Park-street, London, W.1.

New Licensed Premises.

Established corporation housing estates will not be allowed to have licensed premises if a decision of the Liverpool Housing Committee is accepted by the City Council. These estates are fully built on, and the City Council recently decided that only consideration for licensed premises should be given in respect to estates still being dealt with. There are four estates on which work is still proceeding, and it is suggested that reservations for licensed premises should be made there. Temporary housing estates are excluded, as also are city flat schemes.

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TRADE NEWS

Specialists and Sub-Contractors.

The Council of the Federation of Associations of Specialists and Sub-Contractors announces that the British Tarpaviors' Federation has taken up associate membership of the Federation.

U.N. Secretariat Building.

We have been informed that the tender submitted by Messrs. Pilkington, Bros. Ltd., of St. Helens, Lancs, for glass for the interior of the Secretariat Building, United Nations Headquarters, New York, has been accepted.

Progress in Plastics.

The growth of the plastics industry and the wide variety of uses for plastic materials are described in an illustrated booklet issued by Bakelite, Ltd., 12, Hobart-place, London, S.W.1. The booklet, which is called "Bakelite Progress," includes some interesting designs for moulded television cabinets.

An Interior Decorative Medium.

Imperial Chemical Industries, Ltd., have just published a new booklet on "Frestex," a decorative medium for interior use in buildings. The booklet gives information on mixing and the use of "Frestex" and illustrations are given showing some of the effects obtainable by texturing with simple tools.

New Ironwork Catalogue.

Messrs. Haskins, of St. John-street, Clerkenwell, E.C.1, have recently issued their new ironwork catalogue, giving particulars of their collapsible gates, fireproof doors, fire-escape stairs, gates and railings, steel doors, balustrades, handrails and their shopfront grilles. Copies of this catalogue can be obtained from the above address.

Company's Sales Promotion Methods.

Messrs. Dexion, Ltd., makers of Dexion slotted angle, have been staging private trade exhibitions in a number of English towns and cities and due to the success of these they are now applying the same methods to hard currency export markets. The first country selected for this venture is Switzerland, where they are holding three exhibitions each of four days' duration—in Lausanne, Basle and Zurich. Later they will stage exhibitions in Canada and Belgium.

Cement Manufacturers' Annual Report.

The annual report of the Associated Portland Cement Manufacturers, Ltd., states in connection with new works and extensions, that at home good progress has been made with the alteration and additions to existing works, and that it is estimated that present productive capacity, together with that of extensions in hand, will approximately meet all requirements in the near future. Sanction has been given to the provision of a new research laboratory and equipment at an estimated cost of £125,000. Overseas, the new works of one of the Mexican companies in which they are interested and the erection of a new works by the South African company have been completed and are now in production. The reconstruction and extension of the works of the Australian company are in hand. In view of the proposal of the Labour Party, prior to the last general election, to nationalise the cement industry, the report states that a wholly-owned subsidiary company, Associated International Cement, Ltd., has been formed for the purpose of holding the company's overseas investments.

THE SCOTTISH BUILDER

NEW BUILDINGS

Caldercruix.—Lanarkshire C.C. is to erect houses and also police station, for which plans are in the hands of J. Miller, Lanarkshire House, Ingram-st., Glasgow.

Carnwath.—Lanarkshire C.C. to erect public school, for which the architect is William Watt (F.), Albert-st., Motherwell-Wishaw.

Edinburgh.—Plans to be prepared for Catholic school, Inch, estimated to cost £55,000, and for which the architect is A. G. Forgei (F.), Municipal-chbrs., Parliament-sq., High-st., Edinburgh.

Glasgow.—Plans are in the hands of the North British Locomotive Co., Ltd., Polmadie, Glasgow, for new buildings at Aitkenhead-rd.

Glasgow.—Plans to be prepared for service depot for the Electricity Board at Partick site, and for which the architects are Wylie, Shanks & Wylie (FF.), 120, Blythswood-st., Glasgow, W.C.2.

Glasgow.—Plans to be prepared for extension and alterations to factory at Broomloan-rd., Govan-rd., Govan, for Hamilton, Marr & Co., Ltd., for which the architects are T. J. Beveridge & Dallachy, 248, West George-st., Glasgow, W.C.2.

Glasgow.—Plans are to be prepared for Protestant primary school at the Pollock, Priesthill, scheme, and for which the architects are James Taylor, Thomson & MacCrae, 212, Bath-st., Glasgow, W.C.2, and the quantity surveyors are Colin Young & Smith, 102, Bath-st., Glasgow, W.C.2.

Uddingston.—Plans to be prepared for gas works building and plant, for which the architect and engineer is Frederick A. Mitchell, Gas Works, Uddingston.

FUTURE CONSTRUCTION

PUBLIC APPOINTMENTS

Full details of Public Appointments open will be found in the Advertisement pages of this and previous issues.

CONTRACTS OPEN

For some contracts still open but not included in this list see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained.

BUILDING

JUNE 16.

†**Bromley T.C.**—86 houses at Hayes-pl. estate. B.E., Municipal Offices. Dep. £2 2s.

†**Gloucester T.C.**—One fire chief's house, one deputy fire chief's house and ten firemen's dwellings at junction of Coney Hill-rd. and Eastern-ave. A. Morgan (L.), City A., Suffolk House, Greyfriars. Dep. £2 2s.

JUNE 17.

†**Essex C.C.**—Adaptation of Nazeing Park as school for maladjusted children (cost £21,000). County A.

†**Essex C.C.**—Repairs, alterations and redecorations to "Doucecroft," High-st., Kelvedon (cost, £2,446). County A.

†**Hospital Management Committee for St. Francis and the Lady Chichester Hospitals.**—New store, kitchen, etc., Lady Chichester Hospital, New Church-rd., Hove. W. E. Mitchell, secretary, St. Francis Hospital, Haywards Heath. Dep. £2 2s. Tenders by June 27.

†**Malden and Coombe Borough.**—External decoration of Council properties. H. E. Barrett, T.C.

†**Malden and Coombe Borough.**—Conversional works, "Ravenswood," Kingston Hill, New Malden. H. E. Barrett, T.C.

†**Trowbridge U.D.C.**—Pair of shops, garages, and dwellings over at Seymour estate, Shailslane. Pictor, Snailum and Huggins, architects, Abbey-chbrs., Bath. Dep. £2 2s.

JUNE 19.

†**Bucks Standing Joint Committee.**—Eight pairs of police houses at four sites. County A., County Offices, Aylesbury. Dep. £2 2s. Tenders by July 14.

***Shrewsbury B.C.**—Demolition of existing buildings, Coton Hill Mains Dept., 18, Chester-st. Water E. Dep. £2 2s.

†***Southampton C.B.**—Health clinic, Cobden-ave. Boro' A. Dep. £2. Tenders by July 4.

***Tendring R.D.C.**—18 houses at Little Oakley, nr. Dovercourt. E. & S., Council Offices, Weeley, nr. Clacton-on-Sea. Dep. £2 2s.

JUNE 20.

†***Ilford Boro'.**—Building work in connection with proposed secondary modern school for girls, Grove-rd. B.E. Tenders by September 9.

JUNE 22.

***Glasgow Corporation.**—61 flats for single persons, Calfhill-rd., Pollok. Director of Housing, 20 Trongate. Dep £2 2s.

***Glasgow Corporation.**—416 flats at Milton. Director of Housing, 20, Trongate. Dep. £5 5s.

Somerset River Board.—Construction of r.c. road bridge over the new river Blind Yeo at Manmoor-la., in the U.D. of Clevedon. County S., County Hall, Taunton.

†***Wembley T.C.**—List of builders and contractors for repairs and maintenance of Council houses and flats. K. Tansley, T.C.

JUNE 23.

***Scarborough T.C.**—Block of flats and maisonettes at Longwestgate. H. V. Overfield, B.E. Dep. £2 2s.

JUNE 24.

***Merioneth Standing Joint (Police) Committee.**—Police house, Llanuwchllyn. County A., Dolgelley. Dep. £3 3s.

JUNE 26.

***Bootle C.B.**—78 dwellings, 120-acre site. B.S Dep. £2 2s.

East Kesteven R.D.C.—Erection of houses in various parishes. Five contracts. Council's A., 14, Northgate, Sleaford.

†***Newcastle-under-Lyme Borough.** — Fifty houses. C. J. Morton, Town Clerk.

JUNE 27.

***North-West Metropolitan Regional Hospital Board.**—Names to go on "Approved List of Building Contractors." A. J. Bennett, secretary, 11a, Portland-pl., London, W.1.

***St. Austell U.D.C.**—Ten houses, Poltair site. H. D. King, E. & S. Dep. £2 2s.

JUNE 28.

***Whiston R.D.C.**—Central works depot. Watson Garbutt, Architect and S.

JUNE 29.

***Glasgow Corporation.**—267 flats, Berryknowes-rd. Director of Housing, 20, Trongate. Dep. £5 5s.

JUNE 30.

***Bebington T.C.**—60 dwellings at Brackenwood, Higher Bebington. B.E. & S., Municipal Offices. Dep. £2 2s.

***Merthyr Tydfil C.B.**—Workshop and boiler-house block, being first stage of College of Further Education at Ynysfach. Yorke, Rosenberg and Mardall, architects 2, Hyde Park-pl., London, W.2. Dep. £3 3s., payable to B.C.

Saltash B.C.—Erection of 15 pairs of houses at Warraton site. Boro' S., Church House, Saltash. Dep. £5 5s.

***Witham U.D.C.**—Five pairs semi-detached houses and one terrace of four, Spinks-la. housing site. A. E. Wiseman, architect, 10, Duke-st., Chelmsford. Dep. £3 3s.

MOORLANDS
INFANTS' SCHOOL
for City of Bath Education Committee

Architects:
Pictor, Snailum and Huggins, F/A.R.I.B.A.

Illustrated and described in this issue on pages 776 to 780

INFANTS' FURNITURE

in both Light Alloy and Wood for the Classrooms and Canteens at this School were supplied by:

THE EDUCATIONAL SUPPLY ASSOCIATION LTD.
ESAVIAN HOUSE
181, HIGH HOLBORN
LONDON · W.C.1
Telephone: HOLBORN 9116

JULY 1.

***Dagenham T.C.**—Memorials to civilian war dead at Chadwell Heath Cemetery. B.E. Dep. £1 1s.

JULY 3.

***Chertsey U.D.C.**—External painting of 50 houses at New Haw. E. & S.

***Harpenden U.D.C.**—Decorations and repairs to public hall. H. E. Stoper, E. & S. Dep. £1 1s.

***Todmorden T.C.**—48 houses at Harley Wood estate, Burnley-rd. B.E., Municipal Offices. Dep. £2 2s.

***Wimbledon Borough.**—Conveniences, Cannizaro Park, S.W.19. T. Webster, B.E. & S. Dep. £2 2s.

JULY 4.

***Oundle and Thrapston R.D.C.**—24 houses, etc. Gotch, Saunders and Surridge, architects, Bank-chbrs., Kettering. Dep. £2 2s.

JULY 7.

***Preston C.B.**—Alterations to Grammar School. B.E. & S. Dep. £2 2s.

JULY 10.

***Brentford and Chiswick B.C.**—Nine dwellings, Chesterfield-rd., Chiswick. B.E. & S. Dep. £5 5s.

JULY 14.

***Preston C.B.**—Lay-out of children's playground with buildings, Taunton-st. B.E. & S. Dep. £2 2s.

JULY 17.

Pontefract B.C.—Erection of 14 shops with flats over at Chequerfield estate. Boro' E., Municipal Offices, Pontefract. Dep. £2 2s.

NO DATE.

Arundel B.C.—Erection of 22 houses on the Pearson-rd. housing scheme. T. Greenfield, F.R.I.B.A., "Newstead," Midhurst, Sussex. Dep. £1 1s.

PAINTING, ELECTRIC LIGHTING, MATERIALS, ETC.

JUNE 21.

***Romford B.C.**—Electrical installation to 40 houses at Masefield-cres. estate. B.E. and S., Town Hall. Dep. £2 2s.

JUNE 23.

***Merton and Morden U.D.C.**—Painting of lamp columns and ventilating shafts. E. & S., Morden Hall, S.W.19.

JUNE 28.

***Bradford City.** — Painting, St. James's Abattoirs. City A.

JUNE 29.

***Bromley T.C.**—External painting to 64 prefabricated bungalows. B.E. Dep. £1.

JULY 3.

***Southport C.B.**—Painting exterior of 286 houses. B.E.

ROADS, SEWERAGE AND WATER WORKS

JUNE 21.

Featherstone U.D.C.—Erection of r.c. water tower at North Featherstone, near Pontefract. S. & W.E., Council Offices, Featherstone. Dep. £5 5s.

JULY 10.

Longport R.D.C.—Laying of approx. 26 miles water mains in eastern parishes of district. W. Herbert Bateman and Partners, consultant engineers, Chesterfield House, Batheaston, Bath. Dep. £5 5s.

GENERAL BUILDING WORK (LONDON)

Caterham. — CONVERSION. — B. Poulter, F.R.I.B.A., "Stonebanks," Marks-rd., Warlingham, has received planning approval for the conversion of "Oakley," 24, Harestone-hill, Caterham.

Caterham.—CONVERSION.—Approval has been given to plans submitted by B. Poulter, F.R.I.B.A., "Stonebanks," Marks-rd., Warlingham, for the conversion of 4, High-st., Caterham, into three shops and four flats.

Colindale.—STORE.—T. and C.P. approval has been given to application by Bertie Crewe and Kay, chartered architects, 1, Green-la., N.W.4, for the erection of a store at rear of 6, Rushgrove-parade, Rushgrove-ave., N.W.9.

Cranham.—HOUSES.—T.C. approval has been given to A. D. Macgregor, builder, 113, Corbets Tey-rd., Upminster, to erect 11 houses in Cranham-gdns.

Edgware.—REBUILDING.—Bertie Crewe and Kay, chartered architects, 1, Green-la., N.W.4, have applied to rebuild store to factory at Forum Side, Edgware, for Chas. Wright, Ltd.

Hendon.—EXTENSION.—S. R. Miller, F.R.I.B.A., 27, Radnor-ave., Harrow, Middx., has applied to extend factory and offices at The Hyde, N.W.9, for Alfred Gilbert and Sons, Ltd. T. and C.P. approval has been given.

Kensington.—COLLEGE BUILDING.—The council of the Royal College of Art has appointed Mr. Rodney Thomas, A.R.I.B.A., 5, Seymour-walk, Fulham-rd., S.W.10, who will prepare a report and a schedule of requirements to guide the architect officially chosen to erect their new building in Kensington.

"THE BUILDER" PRICES

BRASS TUBES

The Brass and Copper Tube Association announce that in consequence of the increase in the controlled price of zinc which came into operation on May 30, the basis price of brass tubes was increased on and from that date by ¼d. per lb. to 17¾d. per lb. The list prices of brass and aluminium brass ferrules were also increased by ¼d. per lb.

COPPER-NICKEL TUBES

The Brass and Copper Tube Association announce that in consequence of the increase in the price of nickel which came into operation on June 1, the basis price of 70/30 copper-nickel tubes has been increased by 2¼d. per lb. to 26¾d. per lb. The list prices of 70/30 copper-nickel ferrules have also been increased by 2¼d. per lb.

ZINC

The Ministry of Supply announces that from June 4 the price of good ordinary brand zinc has been increased by £12 from £111 10s. to £123 10s. per ton, delivered. Prices of other grades have been varied accordingly.

ZINC OXIDE

The zinc oxide manufacturers announce that from June 5 the prices of zinc oxide, in lots of not less than 2 tons, delivered buyers' premises, are increased by £10 10s.

	New Price.	*Old Price.*
	£ s.	£ s.
Red Seal	115 10	105 0
Green Seal	117 0	106 10
White Seal	118 0	107 10

BRASS TUBES

The Brass and Copper Tube Association announce that in consequence of the increase in the controlled price of zinc announced on June 5, the basis price of brass tubes is increased forthwith by ¾d. per lb. to 18¼d. per lb. The list prices of brass and aluminium brass ferrules are also increased by ¾d. per lb.

COPPER

The Ministry of Supply announces that from June 6 the price of electrolytic copper was increased by £16 from £170 to £186 per ton delivered consumers' works. The Ministry's buying price for rough copper in slabs of from two to three cwt. was also raised from the same date from £132 to £144 per ton. Discounts, premiums and charges for forward delivery remain unchanged.

BRASS TUBES

The Brass and Copper Tube Association announces that in consequence of the increase in the controlled price of copper which came into operation on June 6, basis prices of tubes are increased as follows:—

	Basis Price.
Copper tubes increased by 1¾d.	= 21¼d. per lb.
Brass tubes increased by 1¼d.	= 19¼d. per lb.
Copper-nickel tubes 70/30 increased by 1¼d.	= 28¼d. per lb.
Other alloys	Prices on application

The list prices of condenser ferrules have also been increased as follows:—

Brass and aluminium brass ferrules increased by 1¼d. per lb.

Copper-nickel ferrules 70/30 increased by 1¼d. per lb.

St. James's-street. — ADDITIONS. — W. H. Watkins, Gray and Partners, FF.R.I.B.A., 19, Grosvenor-pl., S.W.1, are the architects for the addition of rooms for guests at the Carlton Club, St. James's-st., S.W.1.

Warlingham. — CONVERSION. — Winter and Pickering, L. & A.R.I.B.A., 114-115, Holborn, E.C.1, have submitted plans for conversion of stable building to living accommodation at 80, Westhall-rd, Warlingham.

(PROVINCIAL)

Alnwick.—R.D.C. approved plans by W. Gibson, mining engineer, Swarland House, Amble, on behalf of N.C.B., for locomotive sheds, workshops and stores at Shilbottle Colliery.—R.D.C. to acquire land at Glanton for 12 houses.

Armagh.—Dr. E. M. Lindsay, Director of Armagh Observatory, announced that Governments of Northern Ireland and Irish Republic have agreed to build a planetarium at Armagh.

Billingham-on-Tees.—Durham C.C. to acquire 16 acres in Roseberry-rd. for erection of county college.—I.C.I., Ltd., to carry out extensions to plumbers' shop, extensions to staff canteen and are also to build garage block at their Casebourne Cement Works.

Billingham-on-Tees.—U.D.C. has applied for sanction to carry out scheme for a new John Whitehead Park. Layout plans have been prepared by Surveyor, J. H. Hill.

Birkenhead.—T.C. accepted offer of Victoria Estates (Wirral), Ltd., Liverpool, to erect 22 houses at Windermere-rd., Upton, at £34,276.—T.C. to invite tenders for adaptation of Livingstone-st. baths as assembly hall.

Blackburn.—Churches Joint Planning Com. approved plans for St. Marks' new Sunday school at Layton at £10,000.

Blackpool.—B.C. to negotiate with T. Bannister & Sons, 176, Queen's-dr., Blackpool, for erection of houses.

Brighouse.—B.C. approved plans for:—Additional classrooms at Longroyde School and Bailiffe Bridge School, Victoria-rd., for West Riding C.C.; new offices, canteen, etc., Bradford-rd., Bailiffe Bridge, for M. & C. Whitehead; alterations to form nursery at Owler Ings Mill for George Turner & Co., Ltd.

Burnley.—Myrtle Bank County Infants' School has been designed by Quiggin & Gee, 11, Oldhall-st., Liverpool, architects.—B.C. seek starting date for Central Transport Garage.—To invite tenders for alterations and adaptation at "Fern Bank" for children's home.

Caernarvon.—T.B. Subjects Aid and Protection Society propose new factory adjoining existing premises at Slate Quay.

Chester-le-Street.—Extensions are proposed to colliery canteen at Beamish Second Colliery for National Coal Board.—R.D.C. Housing Com. to consider provision of hostels for old people.

Clayton-le-Moors.—U.D.C. to erect further 20 houses at Field Bottoms estate.

Clwyd and Deeside.—Hospital Management Com. propose hospital on Deeside.

Colwyn Bay.—T.C. approved plans, extensions to pier and combined theatre and conference hall at £125,000.

Darlington.—M. of E. has approved schedules of accommodation proposed by E.C. for proposed engineering, buildings, and applied science block at Darlington Tech. College.—T.C. has applied to M.H. for sanction to borrow £48,500 for 26 "Z" type houses at Haughton South; £35,632 for 32 flats at Haughton South; and £26,845 for 24 terrace houses at Haughton South.—Bussey & Armstrong, builders, Brinkburn-rd., Darlington, to erect 5 houses in Swaledale-av.—Darlington Forge, Ltd., to build fettling shop in Cleveland-st.—Whessoe, Ltd., to extend their fitting and plate shop.

Doncaster.—Additions to clothing factory, Wheatley Hall-rd., proposed by Montague Burton, Ltd. Staff architect, N. Martin, A.R.I.B.A., Hudson-rd. Mills, Leeds.

Huddersfield.—West Riding C.C. recommended to approve adaptations at county fire service H.Q. at Barney-rd. at £5,000.

Hyde.—B.C. approved plans for:—Dairy at Dukinfield-rd. for United Co-op. Dairies, Ltd.; showroom at Henry-st., for J. Cooper; extensions at Dawson-st. for Redferns Rubber Works.

Kesteven.—C.C. propose hostel block at Stoke Rochford Training College at £31,500.

Liverpool.—Regional Hospital Board to consider layout for mental hospital at Lathom Park estate, Ormskirk.—Propose hospital at Greaves Hall Bank, Southport (work commences this year) at £1,000,000. Architect to board, T. N. Mitchell.

Matlock.—U.D.C. approved plans for extensions to lead-processing plant at Cawley-la., South Darley, for H. I. Enthoven & Sons.

Newcastle-on-Tyne.—City Council applied for sanction to borrow £403,842 for building three new schools. They are Montagu Estate Prim. School (architects, P. L. Browne, Son & Harding, Pearl-bldgs., Newcastle); Denton Park Prim. School (architect, C. S. Errington, 45, Grainger-st., Newcastle); and Blakelaw Estate Sec. Mod. School for Girls (City Architect, 18, Cloth-market, Newcastle). First two schools will be prefabricated and third of traditional construction.

Northumberland.—C.C. has approved preliminary sketch plans for Longbenton Seaton Burn County Mod. School to cost £127,000. Architects are Cackett, Burns Dick & McKellar, 21, Ellison-pl., Newcastle-on-Tyne.—C.C. to spend £15,000 on a farm steading at Kirkley Hall Farm Institute.

Northwich.—R.D.C. approved development layout for Cuddington, including 3 public-houses, hotel, 2 clubs and residential hotel. Plans by surveyor, J. Birtwhistle.

Oldham.—C. of E. Authorities propose new churches at Limeside and Fitton Hill estates.—B.C. approved plans for:—Extensions to laundry at Bromley-st. for Frankhill Laundry Co., Ltd.; extensions to dairy at Crofton-st. for A. Barnes—Giles Shaw & Co., Ltd., propose warehouse at junction of Bloom-st. and Garlick-st.

Otley.—West Riding E.C. propose additional classrooms at Menston School.

Ripponden.—U.D.C. to invite tenders for 16 houses at Brigroyd and 8 at Barkisland. Preparing plans for further 24.

Ross (Herefordshire).—U.D.C. propose erection of 40 houses. Plans by architect, F. E. C. Davoll.

Salford.—Winterbottom Book Cloth Co., Ltd., to rebuild works at Liverpool-st. and St. Luke's-rd., Pendleton.—E.C. propose alterations to 6 nursery schools.

Seaton Valley.—U.D.C. intends proceeding with plan for 198 houses at Seghill. Scheme being submitted to M.H. U.D.C. Surveyor, T. W. Burgess.

Sheffield.—Regional Hospital Board propose extension to laundry at St. Catherine's Institution; 4 staff houses at Rauceby Hospital; 4 staff houses at Saxondale Hospital; conversion of male detached block into geriatric unit at Middlewood Hospital; new nurses' quarters at Branston Hall Sanatorium; adaptations for nurses' quarters at Foxby Hill; adaptations of Penmore Hospital as hospital for chronic sick and Penmore House as a nurses' home; extensions to pathological laboratory at Leicester General Hospital; ante-natal clinic at Melton Mowbray Infirmary.

Shrewsbury.—T.C. propose new market outside town. Surveyor, F. R. Dinnis.

Solihull.—Cinema proposed at Station-rd. Architects, W. Weedon & Partners, 129, Lordswood-rd., Birmingham.

Sunderland.—M.H. has approved T.C.'s revised plans for hostel on the Thorney-cl. estate. December 1 has been fixed as starting date for the work. Plans by Boro' A. (H. C. Bishop), Stockton-rd., Sunderland.—Six similar hostels are planned by T.C. and sites have been tentatively selected

Walsall.—Boro' S. to prepare plans for day nursery at Coalpool.

Warwickshire.—E.C. propose 2 schools at Newbold, Rugby. Plans by C. H. Elkins, County A.

West Hartlepool.—Hartlepools Co-op. Society, Ltd., Stockton-st., West Hartlepool, to build workshops in Thompson-st. Plans by Society's Building Dept. have been approved.—Robert Burke, Lambton House, Lambton-rd., Newcastle-on-Tyne, is architect for church and presbytery in Stockton-rd.—Alterations are proposed to premises in Clarence-rd. for Northern Daily Mail (architects, S. W. Milburn & Partners, 9, Esplanade, Sunderland).—Prices Tailors, Ltd., Cardigan-cres., Leeds 4, to carry out alterations to shop premises at 46-48, Lynn-st., and have prepared own plans.

West Riding.—E.C. included following schemes in 1950 schools programme:—Ackworth Sec. Mod. (first instalment); Rossington Prim., Ecclesfield; Parsons Cross, Remington-rd. (second instalment); and Wath Park-rd. (second instalment). County A., H. Bennett, County Hall, Wakefield.

Wigan.—T.C. propose large new housing scheme at Worsley Mesnes. Plans by Boro' E., D. M. McKellen.

Wigan.—R.D.C. propose 12 houses at Shevington site and 18 at Vicarage-la., Shevington.—Approved plans for extensions to Shippons at Rookery Farm, Dalton.

TENDERS

* Denotes *accepted.*
† Denotes *provisionally accepted.*
‡ Denotes *recommended for acceptance.*
§ Denotes *accepted subject to modification.*
¶ Denotes *accepted by H.M. Government Departments.*

Anglesey.—Construction of Bodafon service reservoir, for C.C.: *Shellabear Price, Ltd., 6, Queen Anne's-gate, London, S.W.1.

Birmingham.—Superstructure for first section of Colleges for Technical, Commercial and Art Education, for T.C. H. V. Ashley & Winton Newman (FF.), 3, Verulam-bldgs., Gray's

Inn, London, W.C.1. Quantities by L. C. Wakeman & Partners, 126, Hagley-rd., Birmingham, 16: †Myton, Ltd., Clough-rd., Hull, £819,275.

Boldon.—Erection of 36 houses at Boldon Colliery, for U.D.C. N. Hindmarsh, surveyor: *W. D. & R. Allison & Son, Whitburn, £43,226 (revised tender).

Bootle.—Houses for B.C. at Acre housing estate, Ford station: *Direct Labour, £46,592 (38); *T. S. Sumner, Ltd., Trent-st., £37,788 (24); *City Contractors, Ltd., 40, North John-st., £15,558 (12); *H. Bevan (Builders), Ltd., 30, Desmond-st., £10,214 (8). All of Liverpool.

Brighouse.—30 houses at Stoney-la. estate, for B.C.: *J. Jagger & Sons, Ltd., £12,300 and £8,200 (12 and 8); *R. Lumb & Co., Ltd. (10).

Bromsgrove.—36 terrace-type houses at Shawla. Stoke Works, for R.D.C.: *J. Hickman & Sons (Brierley Hill), Ltd., Brierley Hill, £43,285.

Castle Bromwich.—Factory for Marsh & Baxter, Ltd.: *T. W. Edwards & Sons, Stourbridge.

Chester.—Conversion of "Kenwyn," Dee Banks, as old people's home, for T.C.: *Edward Pritchard & Son, Ltd., Chester, £6,389.

Congleton.—30 houses, Parson-st. site, for B.C. C. Brown, Esq., A.R.I.B.A., M.I.Mun.E., B.E. *J. T. Yearsley, "Parnelscroft," Parkla., Congleton, £35,105. *H. Charlesworth, "Brooklands," Giantswood-la., Congleton, £35,105.

Darlington.—Erection of 24 two-bedroom terrace houses on Haughton South site, for T.C. Boro' A., E. A. Tornbohm, Central-bldgs., Darlington: *J. W. White, Ltd., High Barnes Works, Sunderland, £26,341.

Evesham.—Extensions to Grammar School, for Worcs E.C.: *Mr. G. Foster, Leamington-rd., Broadway.

Forfarshire.—Extensions at Kingsway Industrial Estate for Scottish Industrial Estates, Ltd., 3, Woodside-pl., Charing Cross, Glasgow. Wylie, Shanks & Wylie (FF), architects, 120, Blythswood-st., Glasgow, W.C.2. James Barr & Sons, FF.R.I.C.S., quantity surveyors, 213, St. Vincent-st., Glasgow, W.C.2: *J. B. Hay and Co., Ltd., Hazelhall, Minewells, Dundee (est. cost £550,000).

Glasgow.—Classrooms and lavatories, etc., at Levern school. John MacNab, 129, Bath-st., Glasgow, W.C.2, architect: *The Bristol Aeroplane Co. (Housing), Ltd., Weston-super-Mare.

Kirk O'Shotts.—Supply and erection of 750 ft. television mast similar to that at Sutton Coldfield: *British Insulated Callender's Construction Co., Ltd.

Leeds.—Erection of Spen-la. sec. mod. school. Architects, Yorke, Rosenberg & Mardall (F. & A.), 2, Hyde Park-pl., London: *M. Harrison & Co. (Leeds), Ltd., Post Hill Quarries, Farnley, £193,671.

¶London (M.O.W.).—Contracts placed by M.O.W. for week ended May 20:—

London: Ministry of Defence, Metropole-bldgs., S.W.1, Additional work, Galbraith Bros., Ltd., 34 and 35, High Holborn, W.C.1. *Angus*: Fergus-sq., Arbroath. Erection of temporary office building, J. B. Stewart & Sons, 22, Queen-st., Cupar Angus, Perthshire. *Hampshire*: Hurstbourne Tarrant, Erection of one pair houses for Forestry Commission, Sturgess Bros., Appleshaw, nr. Andover; Amport, near Andover, Erection of three houses for Forestry Commission, A. J. Dunning & Sons (Weyhill), Ltd., Weyhill, Andover.

Kent: Duke of York's School, Dover, Provision of bathroom, R. Corben & Son, Ltd., 5, Castle-st., Dover. *Lanarkshire*: Western District Postman's Office, Scotstoun, Glasgow, Erection, James Laidlaw & Sons, Ltd., 12, Playfair-st., Glasgow. *Lancashire*: Ministry of Pensions Hospital, Park-av., Mossley Hill, Liverpool, Reconstruction of hospital buildings, Humphreys, Ltd., Exchange-bldgs., Liverpool 2. *Northumberland*: Alnwick P.E. & telephone exchange, Erection of garage and workshop, R. Corse & Son, Ltd., 15, Prospect-pl., Amble.

Surrey: Wotton House, Dorking, Adaptations, J. Longley & Co., Ltd., East Park, Crawley. *Westmorland*: Dalton, Erection of two pairs Forestry Commission houses, Norman Jackson, Stockbeck Mill, Kendall. *Yorkshire*: Telephone exchange, Peel-st., Broomhill, Extension, W. G. Robson, Ltd., Bamforth-st., Sheffield 6. *Zetland*: Brae Public School, Shetland, Erection of temporary classroom, Crangle & Bulloch, Ogilys Yard, Lerwick.

¶London (M.O.W.)—Contracts placed by the Ministry of Works for week ended May 27.

London: Natural History Museum, completion of building, Thomas and Edge, Ltd., 25, Greens End, Woolwich, S.E.18: New Telephone Exchange, War Office, Whitehall, erection of structural steelwork, Moreland Hayne and Co., Ltd., 80, Goswell-road, E.C.1; *Bedfordshire*: Clapham, Bedford, erection of Easiform Houses, John Laing and Son, Ltd., Mill Hill, London, N.W.7; *Berkshire*: Aldermaston Research Establishment, erection of stage 1, W. E. Chivers and Sons, Ltd., Devizes, Wilts; *Cornwall*: Penzance Post Office, erection of new workshop, John Garrett and Son, Ltd., Embankment-lane, Prince Rock, Plymouth; *Derbyshire*: Chesterfield Head Post Office, alterations, H. Rouse and Sons, Mansfield Woodhouse, Notts; *Glamorganshire*: United Welsh Bus Station, Swansea, alterations and adaptations, W. H. Harding, Ltd., The Grove, Uplands, Swansea; Custom House Cambrian Place, Swansea, rebuilding, E. Turner and Sons, 31, Water-road, Swansea; Glyn Castle, Resolven, six houses, Forestry Commission, W. H. Snow (Neath), Ltd., Neath; *Hampshire*: R.A.E. Farnborough, Term Contract, apprentices' hostel, conversion of block 46, Lavender McMillan, Ltd., 54, Cheam Commonroad, Worcester Park; *Kent*: Orlestone, nr. Ashford, three pairs of houses, Forestry Commission, C. Jenner and Son, Ltd., Alexandra Works, 5, 7 and 9, Bouverie-road East, Folkestone; *Lanarkshire*: N.A.B., Coatbridge, extensions and alterations, Mr. L. B. White, 379, Main-street, Bellshill, Lanarkshire; *Lincolnshire*: M.O.W. Depot and Store, Longdale-road, Lincoln, adaptations, W. and J. Simons, Ltd., Gordon-road, West Bridgford, Nottingham; *Middlesex*: Orchard Parade, 121-124, Field End-road, Eastcote, new B.P.O., E. J. Lacy and Co., Ltd., 344, High-road, London, N.W.10; Southall Telephone Exchange, extension, George Moss and Sons, Ltd., Cranleigh Wharf, Lady Margaret-road, Southall; *Monmouthshire*: Goytre Forest, Llwyerwood, Abergavenny, two houses, Forestry Commission, W. J. Sweet and Son, Bridge-street, Usk; *Worcestershire*: Lower Leys, Evesham, offices for I.R.O., George Foster (Contractors), Ltd., Leamington-road, Broadway, Worcs; *Yorkshire*: Ripon, erection of traditional type houses, Walter G. Birch (Harrogate), Ltd., Springfield-avenue, Harrogate, Yorks.

¶London (War Dept.)—Works contracts placed by War Dept. for week ended May 27.

Co. Antrim: Miscellaneous work, John Sinton, Ltd., Tandragee. *Co. Down*: Building work, James Ross and Son (Contractors), Ltd., Belfast. *Durham*: Building work, Harry Kindred (Newcastle), Ltd., Newcastle-on-Tyne.

Cumberland: Miscellaneous work, The Building and Repairs Company, Carlisle. *Wilts*: Building work, J. and H. Challis, Ludgershall. *Hants*: Painting work, Donald Humberstone and Co., Ltd., Louth; Building work, Chilworth Estates Co., Ltd., Southampton.

Manchester.—Superstructure of Free Trade Hall, for T.C.: *J. Gerrard & Sons, Ltd., Swinton, £250,000 estimated.

Middlesbrough.—Nine shops with 7 maisonettes and 2 flats above at Thorntree, for C.B. J. A. Kenyon, B.E. & S., Municipal-bldgs. R. H. Bailey & Son, Denmark-st., Middlesbrough, £29,101.

Northfleet.—26 houses at Coldharbour-rd. estate, for U.D.C. Architects, G. E. Clay & Partners, 198, Parrock-st., Gravesend: *Watson & Beaumont, Ltd., Bexleyheath, £33,515.

Ogwen.—13 houses at Mynydd Llandegai, for R.D.C.: *R. Lees & Co. (Beaumaris), Ltd., Crofton Yard, Beaumaris, Anglesey, £21,905; four at Caerhun: *N. Price, 25, Carneddi-rd., Bethesda, £6,215.

Scottish Special Housing Association, Ltd.—Contracts placed from April 20 to May 20:—

Site Servicing.

Cairnhill, New Cumnock (88 Myton Clyde), Myton, Ltd., Mossend, near Bellshill, Lanarkshire. Heel of pavement kerb; Easthouses, Newtongrange, John McCracken, 52, Bucclench-st., Dalkeith, Drilling bores.

House Erection.

Brora, Sutherland, D. S. MacIntosh & Son, Brora, Plumber; Sauchie, Clackmannan (104 trad.), Scottish Gas Board, Alloa, Gas services; Woodmill, Dunfermline (40 Cruden), Barnet & Morton, Ltd., 192, High-st., Kirkcaldy, Front fencing; Woodmill, Dunfermline (40 Cruden), Geo. Henderson, Windygates, Fife, Divisional fencing.

Sighthill, Edinburgh (two Bellrock houses), S.E. Scotland Electricity Board, Edinburgh, Electrical supply; Bothwell, Lanarkshire (16 Trad.), Semtex, Ltd., 53, Kelvin-av., Hillington, Floor finish; Inverness: Ross: Sutherland: Caithness: Argyll & Perth Counties (88 Swedish Timber houses), Modern Homes (Edin.), Ltd., Edinburgh, Several trades (excluding supply of superstructure).

Strathnairn, Inverness-shire (seven trad.), W. D. MacDonald, Drumnadrochit, Inverness-shire, Plaster and cement; Arniston, Midlothian (104 Atholl and 26 Trad.), Barnet & Morton, Ltd., 192, High-st., Kirkcaldy, Chain Link & W. angle I division and rear fencing; Pinkie Mains, Musselburgh (30 Cruden), Ceddes & Springthorpe, Edinburgh, Rear & divisional fencing; Garthdee West, Aberdeen (330 various), A. M. Tweedie & Son, Glasgow, Front fencing.

Sandyflats, Johnstone (66 Trad.), A. M. Tweedie & Son, Glasgow, Protective chain link fencing; Pinkie Mains, Musselburgh (30 Cruden), A. M. Tweedie & Son, Glasgow, Protective chain link fencing; Harthill, Lanarkshire (94 Trad.), Alex W. Thomson, 132, Main-st., Bellshill, Plumber work; Townhead, Coatbridge (10 Weir), Barnet & Morton, Ltd., 192, High-st., Kirkcaldy, Intermediate rear and front fencing.

Bankhead, Lesmahagow (72 Atholl), Barnet & Morton, Ltd., 192, High-st., Kirkcaldy, Intermediate rear and front fencing: Chrystan, Lanarkshire (118 Trad.), Barnet & Morton, Ltd., 192, High-st., Kirkcaldy, Intermediate rear and front fencing; Harthill, Lanarkshire (100 Trad.), Northern Sports Ground Construction Co., 133a, George-st., Edinburgh, Intermediate, rear and front fencing; Belvedere Wood, Bathgate (96 Trad. & 50 Weir), Northern Sports Ground Construction Co., 133a, George-st., Edinburgh, Intermediate rear and front fencing.

Laighstonehall, Hamilton (52 Trad.), Northern Sports Ground Construction Co., 133a, George-st., Edinburgh, Intermediate, rear and front fencing; Mains of Fintry, Dundee (334 Various), Barnet & Morton, Ltd., 192, High-st., Kirkcaldy, Front and intermediate garden fencing; Kelty, Fife (9 Weir Paragon), Barnet & Morton, Ltd., 192, High-st., Kirkcaldy, Intermediate, rear and front fencing; Crosshill & Meadows, Campbeltown (100 Weir), Barnet & Morton, Ltd., 192, High-st., Kirkcaldy, Intermediate, rear and front fencing.

Hilton, Inverness-shire (48 W. Fairhurst), Jas. Campbell & Sons, Ltd., 39, Tomnahurich-st., Inverness, All trades; Sighthill, Edinburgh (two Bellrock houses), Northern Sports Ground Construction Co., 133a, George-st., Edinburgh, Fencing; Tillicoultry, Clackmannan (76 Atholl), Barnet & Morton, Ltd.), 192, High-st., Kirkcaldy, Front and divisional fencing; Netherthird, Cumnock (40 Trad.), Archd. Low & Son, 82, Merkland-st., Glasgow, Plumber work.

Site Servicing.

Maiden Park, Bo'ness (100 Cruden, 50 Atholl), S.S.H.A., Ltd., Site servicing; Cuiken Burn, Penicuik (90 Cruden), S.S.H.A., Ltd., Road and footpath surfacing.

House Erection.

Sighthill, Edinburgh, S.S.H.A., Ltd., Erection of 6/4 apt. double storey houses, for Ministry of Fuel & Power.

Maintenance.

Queenzieburn & Redding Cross (10 M.O.W. Yardstick), Wm. Briggs & Son, Ltd., 200, Old Dumbarton-rd., Glasgow, Roofing.

Skelton and Brotton (Yorks).—Erection of 20 houses at Brotton, for U.D.C. F. Stringer, M.I.Mun.E., E. & S., Council Offices, Skelton-in-Cleveland:

Chas. Hebditch Loftus	... £27,849
F. J. Willis & Son, Hinderwell ...	... 27,737
D. Theaker & Co., Ltd., Staithes	... 26,400
Russell Bros., Stockton-on-Tees ...	... 25,516
John McCreton, Ltd., Middlesbrough	... 24,905
*R. H. Cowie, Ltd., 8, Ely-cres, Redcar	23,714

Stockton-on-Tees.—Piling and foundation work, and circulating culverts, bridge, roads and railways for proposed new power station at North Tees, for B.E.A.: *Sir Robert McAlpine & Sons (Newcastle), Ltd., Carliol House, Newcastle-on-Tyne, £1,375,000.

Stratford-on-Avon.—19 houses at Redlands estate, for T.C.: *Stratford-on-Avon Builders, Ltd., Tiddington, Stratford, £25,631.

Sunderland.—Construction of filter house, 196 ft. by 66 ft., at Wearhead, for Sunderland & South Shields Water Co. A. G. McLellan, company's chief engineer & general manager: *Holland & Hannen and Cubitts, Ltd., 1, Queen Anne's-gate, London, S.W.1.

Swansea.—Castle-st. reconstruction; contract No. 5 (No. 37), for C.B. Architect, O. S. Portsmouth, F.R.I.B.A., 7, Wind-st., Swansea.

Quantity Surveyor, B. W. Ellis, F.R.I.C.S., 2, De la Beche-st., Swansea: ‡E. Turner & Sons, Ltd.

Valley.—Conversion of main building at Mona Camp as dwellings, for U.D.C.: *John Parry & Hughes, Ltd.

Wednesbury.—Extensions at Friar Park-rd., for Wm. Mills, Ltd.: *W. J. Whittall & Sons, Ltd., 132, Lancaster-st., Birmingham.

Worcs.—Erection of infants' section of new County Primary School, Penncricket-la., Causeway Green, Oldbury, for C.C. F. W. B. Yorke & H. M. Barker (F. & L.), 36, Calthorpe-rd., Edgbaston, Birmingham 15:—

Thos. Lowe & Sons, Ltd., Burton-on-Trent	£66,566
J. Ashmore (Builders), Ltd., West Bromwich	66,520
T. Elvins & Sons, Ltd., Birmingham ...	65,773
David Charles, Ltd., Birmingham ...	65,103
Alfred Wright & Sons (Blackheath), Ltd., Birmingham	64,350
Perks & Gould, Ltd., Bilston	64,174
Wm. Jackson (Langley Green), Ltd., Langley Green	63,763
Wm. Sapcote & Sons, Ltd., Birmingham	63,550
John Dallow & Sons, Ltd., Birmingham	63,422
C. Green & Sons, Ltd., Birmingham ...	63,400
J. Harper & Sons, Ltd., Birmingham ...	62,619
A. H. Guest, Ltd., Stourbridge	61,237
F. Deeley, Ltd., Birmingham	60,872
B Whitehouse & Sons, Ltd., Birmingham	60,528
John F. Hughes, Ltd., Wolverhampton	59,652
Parsons & Morrin, Ltd., Birmingham ...	58,923
*Edgar Crowder, Ltd., Birmingham ...	56,748

Military Pile Driving.

A film entitled "Basic Military Pile Driving" has been made for the Director of Military Training, the War Office, as part of the Army's instructional film programme for 1949-50. It is designed primarily for use by the Royal Engineers as a simple comprehensive introduction to the subject. The film is divided into six parts, which cover a wide range of piling operations. In general, the film coverage of the actual operations tells its own story, but in some cases animated diagram is used to put over specific lessons.

The titles of the six individual parts are as follows: Introduction; Correct and Incorrect Driving; Construction of a Single Pier Bridge; Power Hammers; Steel Sheet Piling; and Special Operations and Equipment. Any civilian organisations that may be interested in the film can obtain details from the Army Kinema Corporation, Head Office, 36, Dover-street, London, W.1; or from A.K.C.'s main area libraries.

Students' Successes.

The L.C.C. Catford College of Commerce completed the second year of its courses in housing and estate management in March last. The results of the Incorporated Society of Auctioneers and Landed Property Agents, which have just been announced, include the name of Mr. D. G. Bond, of East Dulwich, who gained first place and first-class honours for his success in the intermediate examination. He has also been awarded the society's silver medal, the society's scholarship of free tuition for the final examination and the "Coatman" prize. Mr. V. Mitchell, of Woolwich, also gained first-class honours in the same examination, and another student of the college, Mr. E. J. R. Boniface, of Bromley, passed Part I of the intermediate examination.

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